ENGINEERING NEWS-RECORD

Third Quarterly Roundup: **Construction Cost and Estimating Guide**

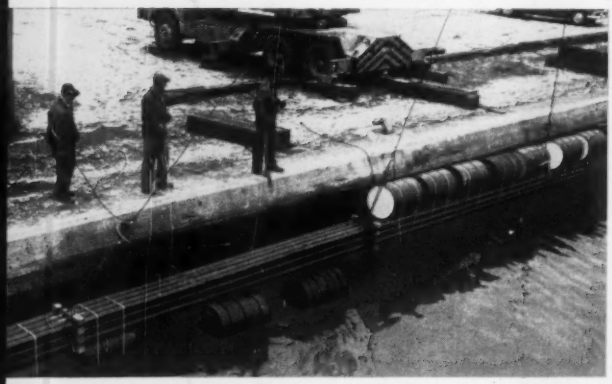
Materials & Equipment Prices & Unit Costs p. 29

Precast arches for gym span 132 feet, weigh 44 tons p. 26

A McGRAW-HILL PUBLICATION

Barge crane lowers wrought iron conduit into prepared cut in river bottom.

Corrosion resistant Wrought Iron conduit carries new submarine cables across Sheboygan River



To float the conduit into position, 55-gallon drums were strapped to the 12 conduit runs. After positioning, straps were cut, allowing pipe to be lowered into the trench.

Construction activity surrounding the St. Lawrence Seaway extends as far afield as Sheboygan, Wisconsin.

Here, the Wisconsin Telephone Company had to remove old submarine cables from the Sheboygan River bed and install new. This activity preceded dredging operations by the U. S. Corps of Engineers to permit navigation of larger vessels.

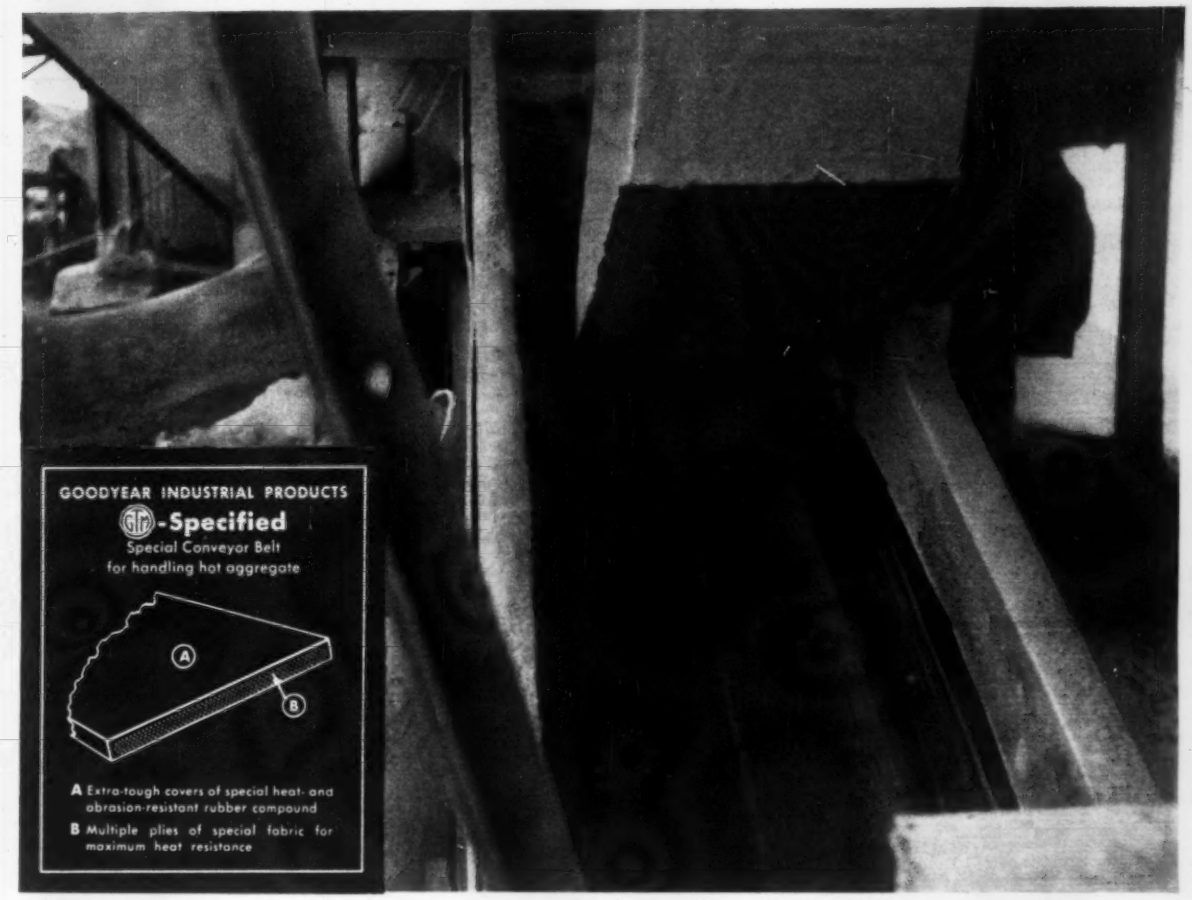
Telephone engineers specified six thousand feet of wrought iron pipe fabricated into 12 conduit runs to carry the telephone cables. Interruptions of service would be costly. And it would be difficult to make replacements. So, material selection narrowed to wrought iron because of its outstanding corrosion resistance.

Our publication on wrought iron for cable conduit is available on request. Write for a copy. A. M. Byers Company, Clark Building, Pittsburgh 22, Pennsylvania.

BYERS Wrought Iron Tubular and Hot Rolled Products

ALSO ELECTRIC FURNACE AMBALLOY STEEL PRODUCTS AND PVC PIPE

Corrosion costs you more than Wrought Iron


GOODYEAR INDUSTRIAL PRODUCTS
G.T.M.-Specified
Special Conveyor Belt
for handling hot aggregate
A
B
A Extra-tough covers of special heat- and abrasion-resistant rubber compound
B Multiple plies of special fabric for maximum heat resistance

Saved over $4,000 on hot-and-heavy job

A heavy flow of aggregate for asphalt mix—delivered at a smoking 450° F.—quickly beat and burned the life out of all previous belts used at this upper New York State batch plant. The longest service was a scant 3 months. And their former belt supplier advised that this was tops under the rugged conditions.

But that was before the G.T.M.—Goodyear Technical Man—made his recommendation: a special belt muscled with multiple plies of special fabric and armored with heat- and abrasion-resistant covers. *Installed, the G.T.M.'s belt put in 37 months of service—saved over $4,000 in belt replacement and maintenance costs alone.*

Eye-opening savings like this are always possible when the G.T.M. tackles a job. He's your man no matter what your industrial rubber problem. Contact him through your Goodyear Distributor—or by writing Goodyear, Industrial Products Division, Akron 16, Ohio.

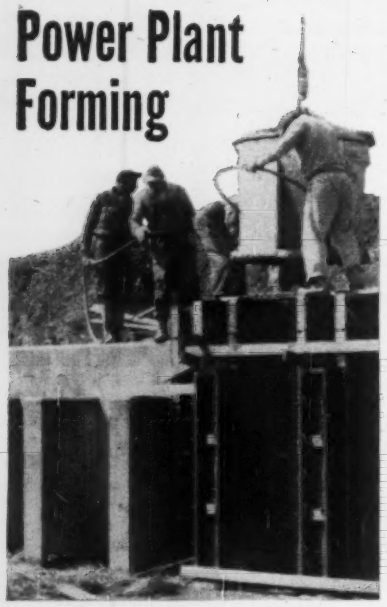
CONVEYOR BELTS by

GOODYEAR

THE GREATEST NAME IN RUBBER

IT'S SMART TO DO BUSINESS *with your Goodyear Distributor. He can give you fast, dependable service on Hose, V-Belts, Flat Belts and many other industrial rubber and nonrubber supplies. Look for him in the Yellow Pages under "Rubber Goods" or "Rubber Products."*

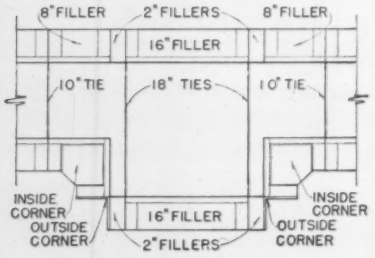
Power Plant Forming



Symons Forms Help Contractor Race Clock

Pour 530 Yards of Concrete in 5½ Hours

Racing a siege of wet, windy weather, workmen on the new $10 million Blue Valley Station of the Independence, Mo. power plant, teamed up to pour 530 yards of concrete during one 5½ hour period.



Pilasters similar to the ones shown are easy to erect with Symons Fillers and Corners.

Sharp Bros. Contracting Co., Kansas City, the contractor, is using 8,000 square feet of Symons Standard High Strength Forms to pour 40,000 square feet of concrete. Much of the concrete is in thick slabs and pedestal bases with wall thicknesses varying from six to 84 inches. Symons 84-inch washer ties are being used in pouring pedestals for the turbines.

You can rent Symons Forms, Shores and Column Clamps with purchase option. Information on Symons products upon request.

Symons

SYMONS CLAMP & MFG. CO.

4265 Diversey Avenue, Dept. J-8
Chicago 39, Illinois

ENGINEERING NEWS-RECORD

EIGHTY-FOURTH YEAR OF PUBLICATION

ABP ABC MEMBER

Editorial Offices, 330 W. 42nd St., New York 36, N. Y.
New York - LOngacre 4-3000; Chicago - MOhawk 4-5800; San Francisco - DOuglas 2-4600; Washington - REpublic 7-6630

Editor, Waldo G. Bowman

Senior Staff Editor, Arthur J. Fox, Jr.
Managing Editor, Edward H. DeHart
Senior Editor, Frederick S. Merritt

Highways, Airports—Transportation
Edward M. Young, Jr.
Marc Leggiero

Buildings, Bridges—Structures
Frederick S. Merritt
Marianne Stern, David B. Hill

Rivers, Sanitation—Water Resources
James B. Sullivan
Joseph N. Todaro, John P. Mahoney

Finance, Labor—Management
Robert J. Stinson, Charles J. Harding, Stuart D. Boynton

Regional Editors
J. Roland Carr, *Chicago, 520 N. Michigan Ave.*
Lauress L. Wise, *San Francisco, 68 Post St.*

Copy—Production
Barbara Lamb
Evelyn Stepic
Shirley Russell
John C. Greenough

Presentation
Harry W. Jensen, Philip J. Horn, Jr.

Statistics, Prices, Costs—Business News
Elsie Eaves, *Manager*
Julia Mahoney, *Construction Reports*
Mildred Wetzel, Marian Sciorra
Diane Tartaglia, Marie Moravsik,
James Webber, Ruth Carlson, *Economics*
Marie Roessler, Evelyn Huber, *Statistics*
David Farquhar, Bertha Herrmann, *Prices, Unit Prices*

Editorial Research and Indexing
Helen Rich
Eva Glerat, Rene Hay, Patricia Witschger

Consulting Editors: Van Tuyl Boughton, *New York*
Nathan A. Bowers, *San Francisco*

Advertising Sales Manager: Donald S. Robertson

Circulation Manager: Edward F. Bessler

Washington Bureau, National Press Bldg., Washington 4, D. C., George B. Bryant, Jr., Chief, Alan E. Adams, Glen R. Bayless, Roy Calvin, Ernest Conine, John C. L. Donaldson, Jay Flocken, Boyd France, Anthony DeLeonardis, Arthur J. Kraft, Donald O. Loomis, Gladys Montgomery, Arthur L. Moore, Seth T. Payne, Dean Reed, Morton A. Reichek, Caroline W. Robertson, Vincent B. Smith.

Domestic News Bureaus: Atlanta—801 Rhodes-Haverty Bldg., Atlanta 3, Charles T. Dixon, Jr., Chief, Frances Ridgway; **Chicago**—520 North Michigan Ave., Chicago 11, Stewart W. Ramsey, Chief; **Cleveland**—55 Public Square, Cleveland 13, William G. Meldrum, Chief, Violet Bashian; **Dallas**—901 Vaughn Bldg., Dallas, Kemp Anderson Jr., Chief, Lorraine Smith; **Detroit**—856 Penobscot Bldg., Detroit 26, Donald MacDonald, Chief, Nancy Moore; **Los Angeles**—1125 West 6th St., Los Angeles 17, John Kearney, Chief, Michael Murphy, Jack Meyer, Marvin Petal; **San Francisco**—68 Post St., San Francisco 4, Margaret Ralston, Chief, Jeuness Keene, Sue Johnson; **Seattle**—6040 Fifth Ave., N.E., Seattle, Ray Bloomberg.

Foreign News Bureaus: New York—John Wilhelm, Editor; **London**—Robert Gibson; **Paris**—Robert E. Farrell; **Mexico City**—Peter Weaver; **Bonn**—Morrie Helitzer; **Beirut**—O. M. Marashian; **Tokyo**—Sol Sanders; **Caracas**—John Pearson; **Moscow**—William T. Coughlin. Correspondents in 55 cities throughout the world.

Correspondents: In 79 principal cities in the U. S. and possessions and Canada.

McGraw-Hill Economics Department: Dexter M. Keezer, Director; W. H. Chartener.

Robert F. Boger, Publisher

ENGINEERING NEWS-RECORD, Vol. 161, No. 12, September 18, 1958

Published weekly by McGraw-Hill Publishing Company, James H. McGraw (1860-1948), Founder. Publication Office, 99-129 North Broadway, Albany 1, N. Y. See panel below for directions regarding subscriptions or change in address. **Executive, Editorial, Advertising and Circulation Offices, McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y.** Donald C. McGraw, President; Joseph A. Gerardi, Executive Vice President; L. Keith Goodrich, Vice President and Treasurer; John J. Cooke, Secretary; Nelson Bond, Executive Vice President, Publications Division; Ralph B. Smith, Vice President and Editorial Director; Joseph H. Allen, Vice President and Director of Advertising Sales; A. R. Venezian, Vice President and Circulation Coordinator. **Subscriptions are solicited only from persons with identifiable commercial or professional interests in construction and building. Position and company connection must be indicated on subscription orders.** United States subscription rate for individuals in the field of this publication $6.00 per year, single copies 50 cents; foreign $20.00 per year, payable in advance. Second-Class mail privileges authorized at Albany, New York. Printed in U. S. A. Title registered in U.S. Patent Office.

© Copyright 1958 McGraw-Hill Publishing Company, Inc. All Rights Reserved.

SUBSCRIPTIONS: Send subscription correspondence and change of address to Subscription Manager, ENGINEERING NEWS-RECORD, 330 W. 42nd St., New York 36, N. Y. Subscribers should notify publisher promptly of any change of address, giving old as well as new address, and including postal zone number, if any. If possible enclose an address label from a recent issue of the magazine. Please allow one month for change to become effective.

Postmaster: Please send Form 3579 to Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

LET'S TALK ABOUT SWING CLUTCHES!

WHAT is a Swing Clutch to you?—just another crane or shovel assembly?

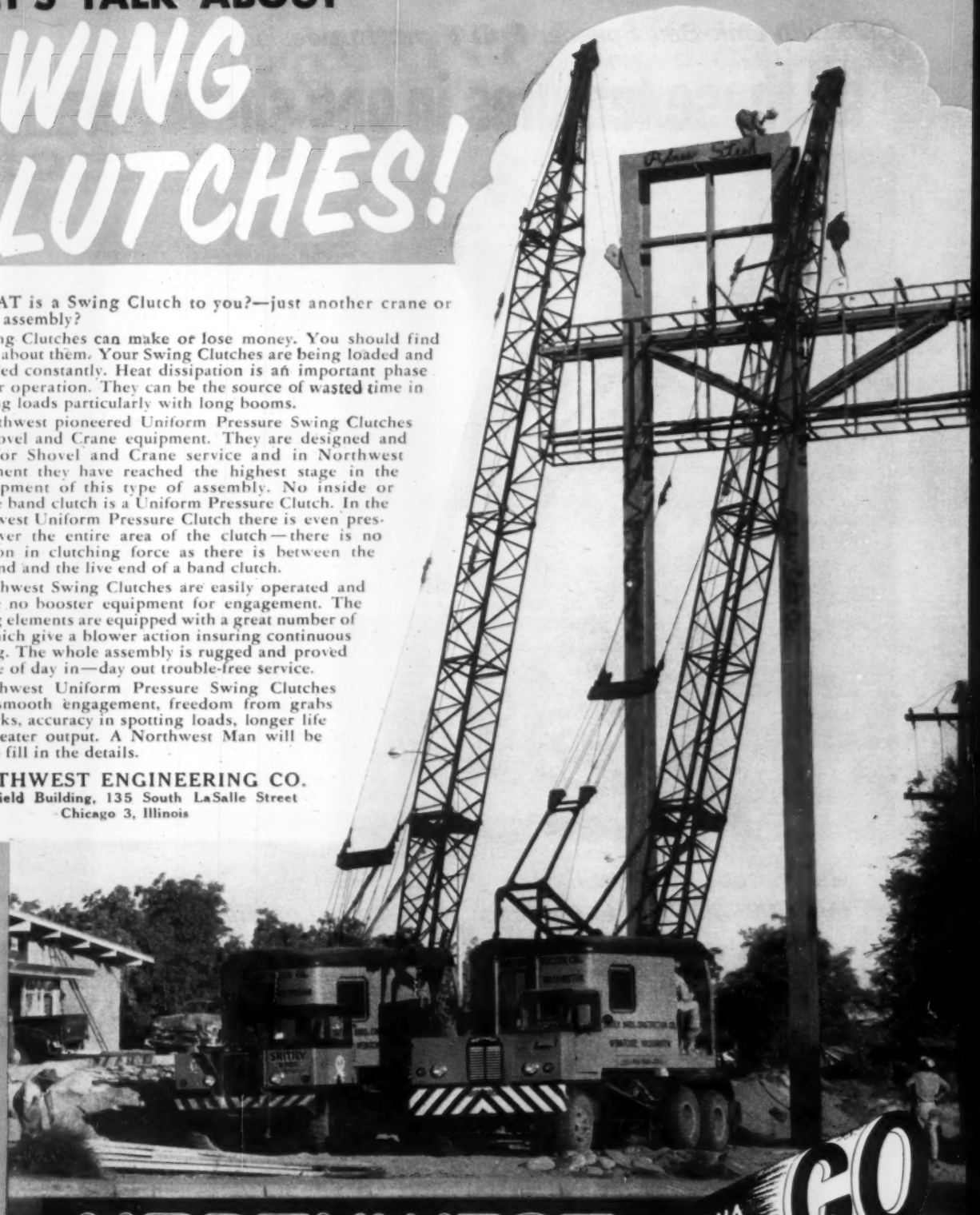
Swing Clutches can make or lose money. You should find out all about them. Your Swing Clutches are being loaded and unloaded constantly. Heat dissipation is an important phase of their operation. They can be the source of wasted time in spotting loads particularly with long booms.

Northwest pioneered Uniform Pressure Swing Clutches for Shovel and Crane equipment. They are designed and built for Shovel and Crane service and in Northwest equipment they have reached the highest stage in the development of this type of assembly. No inside or outside band clutch is a Uniform Pressure Clutch. In the Northwest Uniform Pressure Clutch there is even pressure over the entire area of the clutch—there is no variation in clutching force as there is between the dead end and the live end of a band clutch.

Northwest Swing Clutches are easily operated and require no booster equipment for engagement. The driving elements are equipped with a great number of fins which give a blower action insuring continuous cooling. The whole assembly is rugged and proved capable of day in—day out trouble-free service.

Northwest Uniform Pressure Swing Clutches mean smooth engagement, freedom from grabs and jerks, accuracy in spotting loads, longer life and greater output. A Northwest Man will be glad to fill in the details.

NORTHWEST ENGINEERING CO.
1502 Field Building, 135 South LaSalle Street
Chicago 3, Illinois



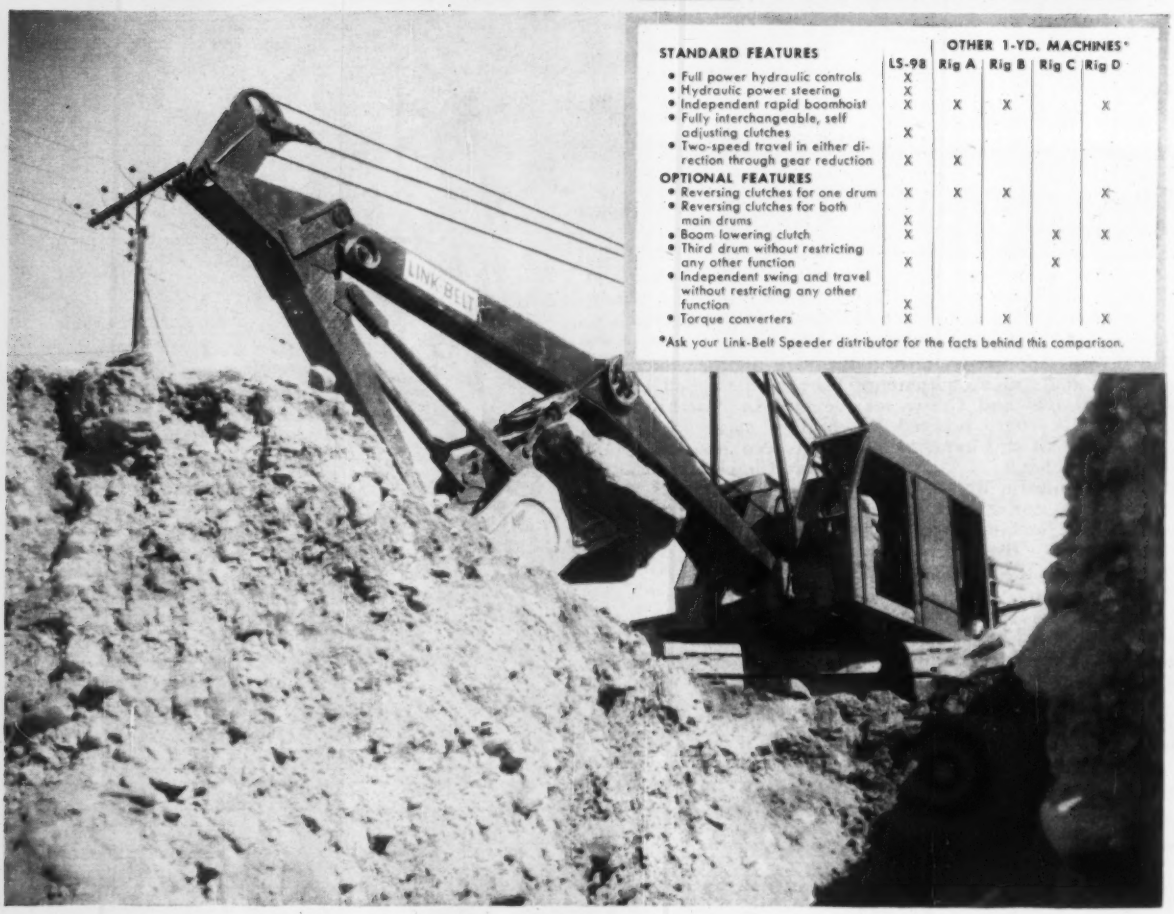
NORTHWEST *Always Ready to* GO

NORTHWEST EQUIPMENT IS BUILT IN THE FOLLOWING SIZES

SHOVELS	CRANES	DRAGLINES	PULLSHOVELS	TRUCK CRANES
¾ Yd. to 2½ Yd. Capacity	13-Ton to 50-Ton Capacity	¾ Yd. to 3 Yd. Capacity	¾ Yd. to 2½ Yd. Capacity	25-Ton and 35-Ton Capacity

Only with Link-Belt Speeder ***Full-Function*** *design . . .*

all these features in one shovel-crane



STANDARD FEATURES	LS-98	OTHER 1-YD. MACHINES* Rig A	Rig B	Rig C	Rig D
• Full power hydraulic controls	X				
• Hydraulic power steering	X				
• Independent rapid boomhoist	X	X	X		X
• Fully interchangeable, self adjusting clutches	X				
• Two-speed travel in either direction through gear reduction	X	X			
OPTIONAL FEATURES					
• Reversing clutches for one drum	X	X	X		X
• Reversing clutches for both main drums	X				
• Boom lowering clutch	X			X	X
• Third drum without restricting any other function	X			X	
• Independent swing and travel without restricting any other function	X				
• Torque converters	X		X		X

*Ask your Link-Belt Speeder distributor for the facts behind this comparison.

Get a profit bonus with these standard features . . . tailor the machine to the job with these optional features

Exclusive with Link-Belt Speeder — revolutionary *Full-Function* design provides a separate power train for each machine function.

That's why you can have and use all these 11 major features on the same machine — without restricting other operations.

Practically double power train life

And that's why *Full-Function* design spreads wear over more clutches, shafts, gears and bearings. Only the power trains in use are under load!

But this is only one of the many Link-Belt Speeder advantages. You also get —

- **Greater usable horsepower**
- **Speed-o-Matic—proven power hydraulic controls**
- **Bonus crane capacity working with long booms at extended radii**

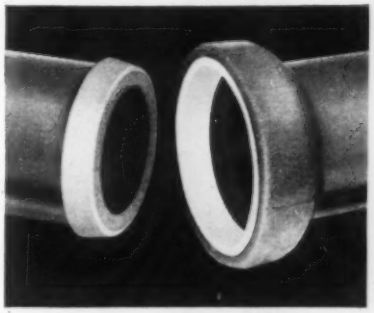
For complete details, contact your distributor. Or write Link-Belt Speeder Corporation, Dept. ENR-158, Cedar Rapids, Iowa, for Book No. 2553. 14,770

LINK-BELT SPEEDER

It's time to compare . . . with a Link-Belt Speeder

longer, stronger AMVIT Jointed Clay Pipe prevents infiltration SIX WAYS

Bottletight, Factory-Made Joint of Plasticized Resins of Polyvinyl-chloride gives lower cost-in-place



Engineering standard and specifications for sanitary sewers are written so that both the contractor and the community can obtain the best type of construction.

They limit the amount of infiltration in sewer pipe joints, which, in turn, reduces pumping and treatment plant costs. Amvit* Jointed Clay Pipe was especially designed to achieve best possible results.

1. FACTORY-MADE QUALITY

The Amvit Joint is manufactured from plasticized resins of polyvinyl-chloride. No other combination of materials is used or needed. It is applied on the pipe by a special manufacturing process and delivered to the job site ready for immediate installation.

2. DESIGN PREVENTS LEAKS

The Amvit Joint is a compression type joint based on the ball and socket principle. The material on the spigot end is a convex shape, with the bell end in a concave shape. Simply pushing the pipe together "makes" the joint, keeping the surfaces of the bell and spigot rings in constant compression. Thus, infiltration, exfiltration, and root penetration are prevented.

3. QUICK, FOUL-PROOF INSTALLATION

The joint is on the pipe delivered to the job site ready for immediate installations. No other materials such as caulking, joint compound, hot pots, or ladles are needed to make the Amvit Joint.

4. PERMITS DEFLECTION, ABSORBS SHOCKS

Amvit is made from a plastic which has many characteristics similar to rubber. It is pliable, permitting deflection without leakage. It is resilient, can absorb shocks, and vibration.

5. BETTER FLOW, LESS MAINTENANCE

The design of the joint assures that the pipe is self-centered at all times. This gives perfect alignment and self-cleansing action. Because the joint is really tight, no foreign matter such as dirt, sand, or stones can possibly enter the line.

6. COMPLETE FITTINGS

Amvit is furnished on all standard fittings, as well as pipe. This will permit a uniformly tight line from house to treatment plant.

Amvit Jointed Clay Pipe, in sizes 4″ through 24″, together with all fittings is available for immediate delivery in the Northeast and Central States.

For more information on how Amvit can help cut your sewer installation costs, write or call American Vitrified Products Company, National City Bank Building, Cleveland, Ohio, or our office nearest you, for this descriptive folder.

SINCE 1848

AMERICAN

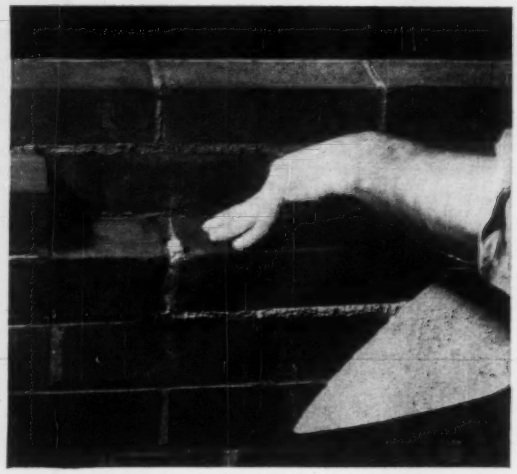
American Vitrified Products Company

CLEVELAND OHIO

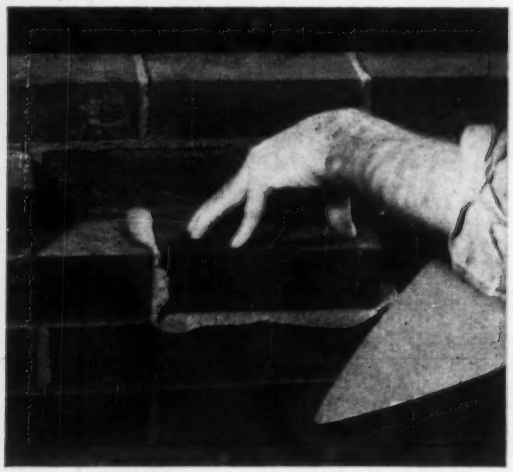
*T. M. Registered

PLANTS ACROSS THE NATION . . . Brazil, Indiana • Chicago, Illinois • Cleveland, Ohio • Crawfordsville, Indiana • Detroit, Michigan • East Liverpool, Ohio Fenton, Michigan • Grand Ledge, Michigan • Lisbon, Ohio • Los Angeles, California • Milwaukee, Wisconsin • South Bend, Indiana • St. Louis, Missouri • Whitehall, Illinois

BRIXMENT MORTAR
Is More Plastic



To compare the plasticity of any two mortars, try shoving a brick into place, with a full head joint. The more plastic the mortar, the easier the work. Try this with Brixment mortar!



AND GOOD PLASTICITY
IS THE FIRST REQUIREMENT OF GOOD MORTAR

One of the most important characteristics any mortar can possess is *plasticity*. Within certain limits, plasticity is the greatest single factor not only in the *economy* of the brickwork, but also in its strength, its neatness, and its resistance to the passage of water.

One of the outstanding characteristics of Brixment mortar is its unusual plasticity. Because of this plasticity, a bag of Brixment will carry three full cubic feet of damp sand and still be as plastic as 1-2-9 cement and lime mortar.

Brixment mortar's exceptional plasticity makes it easy for the bricklayer to secure neat, economical brickwork, with the brick properly bedded, and the joints well filled.

LOUISVILLE CEMENT COMPANY, LOUISVILLE 2, KENTUCKY

Cement Manufacturers Since 1830

The Model 210 Davis Backhoe on the Work Bull 303 can dig flush by simply moving the mast assembly from center to side.

The Rotary Broom on the Work Bull 303 has 96" swath, 30° left and right hydraulic angle control.

The Work Bull 1001 Multi-Purpose Tractor Loader converts into eight different machines.

Stretch Dollars – Save Manpower with equipment that does more . . .

WORK BULL 303 and 500 LOADER

—REVERSE INSTANTLY FOR FASTER CYCLING
—PERFORM A DOZEN DIFFERENT JOBS

POWER MATCHED FOR PROFIT-MAKING PERFORMANCE The Work Bull 303 and 500 Loader rig have been designed to work together as an integrated unit for performance far above anything else in the medium equipment class. With instant reversing (acceleration and direction of travel are controlled by "side-by-side" forward and reverse foot pedals), torque converter, full-time power steering, 5-speed transmission in both directions, plus a 54.5 h. p. engine, you have power, speed, agility all in one package. The 500 Loader has low pivot points for "bull-dozer" type thrust, 43° rollback at ground level for bigger payloads and more breakaway, and telescoping arms for abnormal lifting height.

MANY ATTACHMENTS FOR MULTI-PURPOSE, HEAVY-DUTY JOBS This combination lets you get more production out of one machine because it is easily changed from a 7/8 cubic yard Loader to a Rotary Sweeper, Angle Dozer, Lift Fork, Scarifier, Swinging Crane, or Pick-up Sweeper – right in the field if necessary. **The Davis Backhoe attaches directly to the rig – removes in five minutes for all-around operations.**

LOW PACKAGE PRICE • This combination will cost you less than any other medium-sized, all-purpose rig. And because of its extreme versatility, maneuverability, and high quality, it will make you more money on a wider range of jobs.

OTHER MASSEY-FERGUSON INDUSTRIAL EQUIPMENT includes the Work Bull 1001 Multi-Purpose Tractor Loader (60.3 h. p.), Work Bull 202 (40 h. p.) with integrated Davis Loader-Backhoe, and the Work Bull Fork Lift with 10 easy-to-change attachments.

For information on the complete Massey-Ferguson line ask for Brochure G-4. For specific information on the Work Bull 303 ask for Brochure W-3. ***Write Massey-Ferguson Industrial Division, 1009 South West Street, Wichita 13N, Kansas.***

MASSEY-FERGUSON
INDUSTRIAL DIVISION

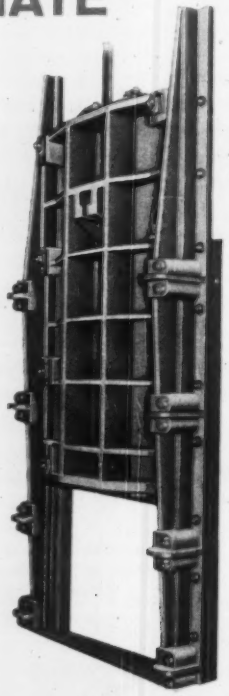
For construction economy...

Rodney Hunt HY-Q Flush Bottom Closure Sluice Gates offer exclusive design advantages which frequently result in substantial savings. Unlike any other design, the Rodney Hunt HY-Q gate seats on a sill flush with the invert, providing greatly improved flow characteristics over conventional gates. This in turn permits the use of a smaller gate size, a narrower channel and lower channel walls to handle a given volume of flow . . . and reduced construction costs.

HY-Q® SLUICE GATE

The first basic sluice gate improvement in years features a resilient seal fastened to the bottom of the sliding disc to provide a cushioned closing at the stop bar. This flush bottom closure assures full, fast, non-turbulent flow at maximum hydraulic gradient, unobstructed by silt or debris. It permits complete drainage of the channel without pumps or piping. In brief, it offers unmatched design flexibility for water, sewage treatment and similar projects . . . with more than 80 gate sizes available, ranging from 12″ x 12″ to 190″ x 120″.

For full design and specification data, write for your copy of Catalog 75.



RODNEY HUNT®

RODNEY HUNT MACHINE CO.

Water Control Equipment Division
85 Water Street, Orange, Mass., U. S. A.

Serving water control engineers with equipment and engineering

Reader Comment

Should Engineers Draft?

SIR—By glorifying the "drafting job" in his article "In Defense of Drafting" (ENR May 15, p. 64), John W. Titus implies that a newly graduated engineer should start as a tracer—not because he can't do anything else, but because he is "fresh from school." This engineer then would have to sit at a drafting table for several years just to get familiar with some drafting tools.

No job will fall into disrepute if the right man is at the right place. A medical doctor will not work as a nurse. Likewise tracing is not a job for a graduate engineer. It would be helpful once and forever to distinguish distinctly the differences between drafting, detailing and designing.

A doctor knows his responsibilities and also those of his nurse. Similarly, an engineer should know clearly what his duties are. A designer should be able to calculate and from time to time to draft, but, I would say, only in a case of emergency. To keep the young engineer from wasting years, let us give him the opportunity to start his job with designing at the outset; of course, he should be supervised by an experienced colleague. In this way, he will enjoy his job and, at the same time, become a better engineer in fewer years to his own satisfaction and the improvement of his country.

MAXIMIL GRIETENS
Civil Engineer
San Francisco, Calif.

Turning Point in Defense

SIR—Your report, "U. S. Proposes Do-It-Yourself Shelters" (ENR Aug. 7, p. 27), represents a turning point in the policy of civilian defense. Although one cannot suppress the feeling of "too little, too late," it is a relief, nevertheless, for everyone who has known for a long time that ". . . shelters offer the best single nonmilitary defense measure for the protection of the greatest number of people."

The program is a very modest one, but even the completion of this modest program will require a tremendous

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

For letter-perfect concrete

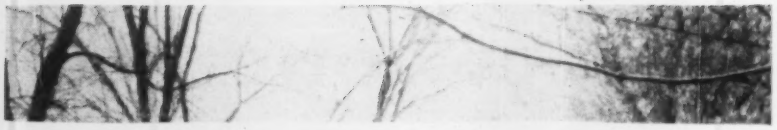
Certainly you can make concrete *without* WRDA and DAREX AEA. But since something of your professional reputation gets poured into every yard you produce, WRDA *and* AEA provide very inexpensive insurance that your good name never will grow less.

Add air to the mix with DAREX AEA and millions of lubricating air bubbles become permanently imbedded in the finished concrete. Controlled air makes the concrete frost-resistant and a whale of a lot more durable. DAREX AEA introduces and controls it.

Reduce water with WRDA and you get a fatter, more uniform mix, with cement particles evenly dispersed and catalyzed throughout. Don't be at all surprised to find compressive strength going up as much as *25 per cent*. WRDA makes concrete pour better too.

Take our words for it: WRDA and DAREX AEA. Together they mean letter-perfect concrete.

DEWEY AND ALMY
CHEMICAL COMPANY
DIVISION OF W. R. GRACE & CO.
Cambridge 40, Massachusetts
San Leandro, Calif. • Montreal 32, Canada



Another Winning Combination

Ingersoll-Rand
COMPRESSOR
...and CONTINENTAL RED SEAL POWER

Year after year, Continental's famous dependability goes on building product acceptance for leading manufacturers of equipment. Here, for instance, an Ingersoll-Rand 85-cfm Rotary Compressor with Continental F-140 engine operates a PB8A Paving Breaker, using moil points, clay spades, and tamping bits, on a job in upstate New York. You cut costly down-time . . . do more work . . . with dependable Red Seal power.

Powerful as the Nation
CONTINENTAL MOTORS
AMERICA'S STANDARD

6 EAST 45TH ST., NEW YORK 17, NEW YORK • 3817 S. SANTA FE AVE., LOS ANGELES 58, CALIF.
6210 CEDAR SPRINGS ROAD, DALLAS 9, TEXAS • 1252 OAKLEIGH DR., EAST POINT (ATLANTA) GA.

Continental Motors Corporation
MUSKEGON • MICHIGAN

CONTINENTAL IS ON THE MOVE IN 1958

amount of work—education of the public, new legislation, etc. Its execution is inconceivable without the wholehearted cooperation of the entire engineering profession.

Locating large shelters, for example, requires close collaboration of city planners, structural and foundation engineers and transportation experts. Also, architects might do some advanced thinking about what to do with all-glass buildings, since a single blast will shatter all the windows and wall panels of several hundred buildings—the problem being even more difficult in wintertime.

Design assumptions representing an economic compromise between maximum safety and minimum cost should be worked out and publicized, and information on completed shelters disseminated. It will probably be advisable to standardize important elements, such as air-tight and splinter-resistant doors and windows.

Solutions to civilian defense problems require a wide field of knowledge extending over almost every branch of engineering. Since it seems that we are behind several years in this field, American engineers must be very much "on the ball." Here is a great challenge for the engineering profession; American engineers must pool all their resources to cope with it.

REMIG A. PAPP
Flushing 67, N. Y.

Foreign Aid Failings

SIR—Your review of the American foreign aid program (ENR July 31, p. 21), particularly in view of the Middle East crises, was especially timely and well thought out. The conclusion reached at the end of section 3 (". . . We must accept the desire of nations that want to remain neutral, or push them into the Soviet bloc . . .") is a very startling one for Americans to hear, and it will require a basic change in our thinking in many respects.

This spring I spent some time in the Middle East—Tehran, Baghdad, Amman, Beirut, Cairo, etc.—and had a distinct feeling that, if we Americans do not modify our policy in those areas, we are going to suffer gravely. Unfortunately, we so want to be loved and liked by everybody that we help, we seem to be unmindful of the national dignity that suffers when another nation has to accept our aid.

I think our primary concern with regard to all of our foreign aid programs should be to help maintain an economic stability that will enable governments and the population to withstand the blandishments of the Com-

YUBA **Movall**®

A product of Yuba Manufacturing Division

EVERYTHING GOES!

EXCLUSIVE LEVEL-ACTION EJECTOR SAVES TIME AND MONEY

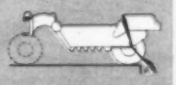
LOADED—The big target, big capacity body carries its load low, maintaining high ground clearance since frame and body are integral and compact.

TAIL GATE UP

DUMPING — Level body offers no gravity resistance, with potential 140,000 lb. ejector push assuring complete positive discharge with minimum use of power.

TAIL GATE DOWN

EMPTY — Sides and bottom are scraped clean, eliminating need for "mucking out" or decreasing capacity for next full load. Complete ejection takes only 11 to 14 seconds.



TAIL GATE DOWN

140,000 pound push cleans out desk-size rocks or sticky clay—clean as a whistle in just 14 seconds!

The versatile, high-speed Yuba "Movall" outperforms rear and bottom-dump haulers on most every type of off-highway job! Its powerful, positive ejector makes playthings of giant rock, frozen muck, or any other top loaded material. Bigger year 'round profits are yours with low-maintenance "Movalls" on the job. Check their unbeatable combination of features, such as high clearance, 180° turning radius, full stability in *all* operations, big tire flotation and traction, huge capacity. Get full information from your Allis-Chalmers, Caterpillar, or International Harvester Dealer, or contact *Yuba Manufacturing Division, Benicia, California,* today.

YUBA CONSOLIDATED INDUSTRIES, INC.

Plants and Sales Offices

YUBA

Yuba designs and builds a wide range of equipment for engineered construction:

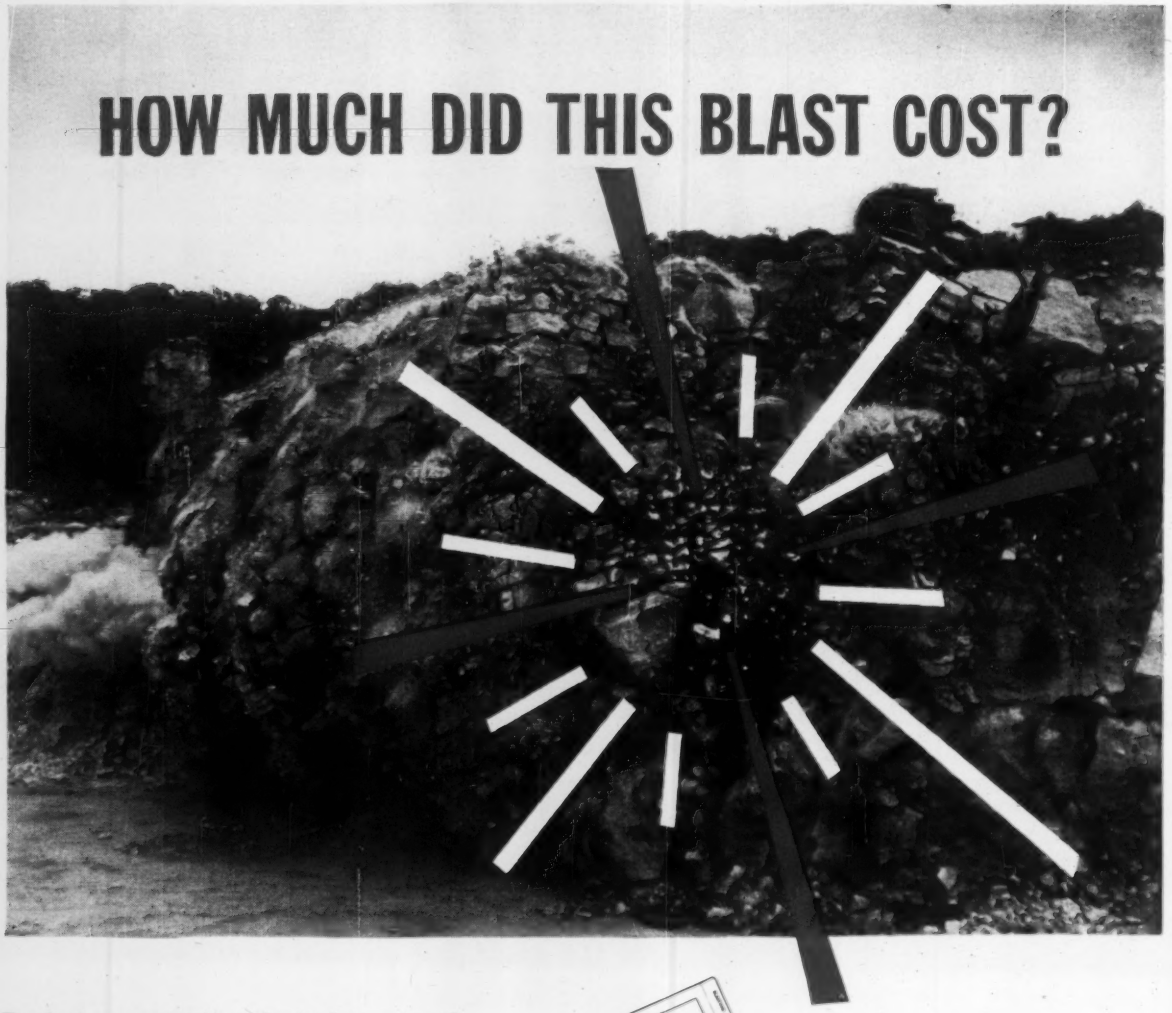
BRIDGES

BUILDINGS-STRUCTURAL

HYDROELECTRIC POWER

CRANES & HOISTS

HOW MUCH DID THIS BLAST COST?



Explosives costs alone don't determine the value of a given blast. The explosives you use have a direct effect on the whole operation: drilling, digging, hauling and crushing.

You can find out, quickly and easily, the true, complete cost on any blast by using the new, simplified computing method developed by Atlas. It's called the Blasting Cost Chart, and it's yours without cost or obligation.

Use this new method to learn your real blasting costs. It will help you plug profit leaks and come out money ahead in your blasting. Your nearest Atlas representative will show you how the chart works, and you can keep the actual figures within your own organization.

EXPLOSIVES
DIVISION
ATLAS
POWDER COMPANY
WILMINGTON 99, DELAWARE
offices in principal cities

munists. If a nation is economically stable, if it is growing and has a promise of a more prosperous future, we don't really have to care whether that nation loves us or not as long as it is free enough to resist Communist enslavement.

We should have no quarrel at this point with countries that wish to remain neutral. Not all countries, let's face it, are either democratic or actually capable of democracy. Countries that do not have a responsible, literate and informed electorate cannot practice democracy. This is a political axiom that we have not yet learned to accept. We must, however, respect the form of government that best suits the needs of the people according to their growth, and not worry simply because a country doesn't have a two-party system as we know it. Yours was a challenging thought and you are to be commended for the fine analysis of the situation.

THOMAS J. MCNEIL
Soiltest Incorporated
Chicago, Ill.

Sell Democracy Abroad

SIR—The time to re-appraise our foreign policy is now. U. S. technical-economic assistance alone (ENR July 31, p. 21) is not enough to make us come out ahead of the Russians in the Mideast, or anywhere else. There is another program which we can offer successfully to all the undeveloped nations, and that is: civic assistance.

Purpose of civic assistance is to sell American democracy and to help the peoples in the undeveloped nations realize the dignity of the individual, the benefits of self-expression and the responsibility of the individual in a democratic society, all of which seem to be lacking in most of the Middle Eastern countries.

NESTER D. VIVADO
South Pasadena, Calif.

CALENDAR

Producers' Council, Inc., 37th annual meeting and chapter presidents' conference, Dupont Plaza Hotel, Miami, Fla., Sept. 17-19.

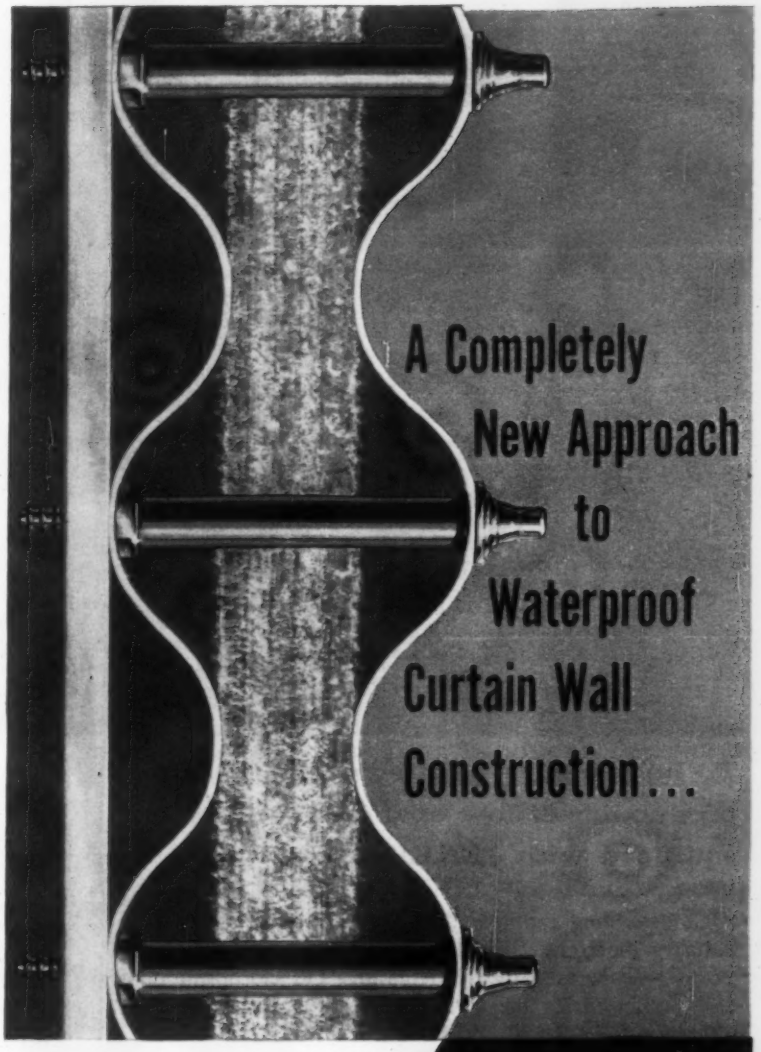
Michigan Aeronautics Conference, 6th annual, sponsored by Michigan Association of Airport Managers, Mather Inn, Ishpeming, Mich., Sept. 17-19.

Prestressed Concrete Institute, annual meeting and convention, Edgewater Beach Hotel, Chicago, Ill., Sept. 21-25.

American Public Works Association, public works congress and equipment show, Municipal Auditorium and Hotel Muehlebach, Kansas City, Mo., Sept. 28-Oct. 1.

Federation of Sewage and Industrial Wastes Associations, annual meeting, Sheraton-Cadillac Hotel, Detroit, Mich., October 6-9.

National Society of Professional Engineers, fall meeting, St. Francis Hotel, San Francisco, Calif. Oct. 23-25.



Townsend
Tuff-Tite®
Tapping Studs

Strong, waterproof curtain wall construction is economical using the new Townsend Tuff Tite tapping stud system. The complete erection job can be handled easily by regular sheeting crews, since the tools suitable for sheeting screws are satisfactory for installing the studs. A savings in time and equipment cost is assured.

Tuff Tite tapping studs permit valley fastening on the inner skin, which greatly increases joint strength; and the conical neoprene washer provides an absolutely waterproof seal. Complete details are supplied in Bulletin TL-135. Write for your free copy. Townsend Company, P. O. Box 237-L, New Brighton, Pa.

Townsend
COMPANY · ESTABLISHED 1816
Sales Offices in Principal Cities
In Canada:
Parmenter & Bulloch Manufacturing Company, Limited, Gananoque, Ontario

PRENTICE FIELD GASOLINE PLANT

Honolulu Oil Corporation, Operator

To help insure uninterrupted production at low operating costs . . . equipped with JENKINS VALVES

An outstanding example of cooperative effort by the oil industry, the Prentice Field Gasoline Plant in Terry County, Texas — operated by the Honolulu Oil Corporation of San Francisco for the owners — is a model of efficient operation.

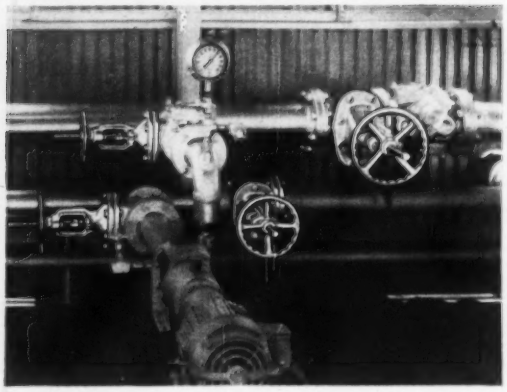
Designed to conserve natural resources and to produce oil properties from a by-product of crude oil production, the Prentice Field Plant produces 74,550 gallons per day of liquid product and a dry natural gas. These are sold by pipe line for use as fuel.

To insure efficient operation with a minimum of employee attendance, the plant is completely equipped with modern controls. For pipe lines, Jenkins Valves were specified, assuring long service life.

No other valves have such a long record of efficient, low-cost service. To building experts and plant operating men, the Jenkins Diamond on a valve has been a mark of extra value for nearly a century. Yet the valves that bear this famous symbol cost no more. Jenkins Bros., 100 Park Avenue, New York 17.

Sold Through Leading Distributors Everywhere

Designed, Engineered and Constructed by
Delta Engineering Corporation, Houston, Texas



Jenkins Valves on utility water pumps at the Prentice Field Gasoline Plant. Engineers specified "Jenkins" for all standard valves in plant, which processes 12,360,000 cu. ft. per day of oil well casinghead gas.

In the buildings in America's future . . .

JENKINS

LOOK FOR THE JENKINS DIAMOND

VALVES

JENKINS SINCE 1864 Jenkins Bros.

ENGINEERING NEWS-RECORD

Vol. 161, No. 12 September 18, 1958

Number of copies printed this issue 83,364

CONTENTS

NATIONAL AFFAIRS

Hiring Practices Get a Face Lifting..... 19
New Pier Is Second of Ten..... 20
Two World Groups Talk Power..... 21
$12 Million Salt Lake Plan Eyed..... 22
East Gets First Desalting Unit..... 22
Engineering News-Picture 23
Industry Splits on ASA Housing Code..... 24
Campus Will Span City Streets..... 24
Precast Arches for Gym Span 132 ft..... 26

FIELD AND OFFICE

Dredge Jets Channel With Discharge Pipe..... 105
Amphibious Rig Samples Soils..... 106

INTERNATIONAL

Formosa's Lung Chien Penstock Finished..... 111

NEW PRODUCTS

Drill Puts Drains in Fills..... 115
Device Takes Computer Data From Air Photos.. 116

MEN AND JOBS

Webb & Knapp Gets New Vice President..... 127
New York's Building Commissioner Retires..... 127

BUSINESS AND FINANCE

Money: Why It's Costing More..... 180
Building Agency Faces Court Test..... 181
Deficit Spells Trouble for Construction..... 182
Building Bonds Face More Opposition..... 184
Metals Firm Enters Engineering..... 184
"Buy American" Issue Is Back Again..... 187
July Volume Sets Record for Month..... 187

LABOR

Prevailing Wages Spark a Feud..... 188
Painters Settle Antitrust Strike..... 189
Employment Behind, but Growing..... 189
City Can't Discriminate in Unions' Favor..... 189

Reader Comment... 8
Calendar 13
Washington Observer 17
Unit Prices 85
Obituaries 133
Construction Reports. 137
Indexes, Statistics... 179
Editorials 198

Back Issues of ENGINEERING NEWS-RECORD *are generally available for the previous six months. Semi-annual indexes will be sent on request.* ENGINEERING NEWS-RECORD *is also indexed in Industrial Arts Index and Engineering Index.*

THE CONSTRUCTION WEEK

BUILDING COLLAPSE UNDER STUDY—Union Carbide Canada, Ltd., has engaged Weiskopf and Pickworth, New York City, and C. D. Carruthers and Wallace Consultants, Ltd., Toronto, to investigate the collapse of the 11 story welded steel frame of its headquarters building in Toronto September 6 (ENR Sept. 11, p. 27). Meanwhile, City Commissioner of Buildings F. E. Wellwood reported to the City Council that the exact cause of collapse has not yet been determined. He said that connections had been welded up to the seventh floor. Additional information now available indicates that the 215 ft long, one-bay wide frame was designed to resist wind in the transverse direction by girder-to-column moment connections and in the longitudinal direction by connections with deep reinforced concrete spandrels. These had not been installed when the frame toppled.

MOSES VS. THE TUSCARORA INDIANS—Appeal to the Supreme Court by the Tuscarora Indians to block flooding of tribal lands as a pumped-storage reservoir could stymie the $705 million Niagara Power Project, Robert Moses declared last week. "We have been jackassed around from court to court," said the New York State Power Authority Chairman, "and are faced with the prospect of more litigation, postponement of permanent financing and perhaps stoppage of work." To move the reservoir to private lands could mean $15 million in extra costs, in addition to new hearings and more court cases, he said.

LOW BID SURPRISE—The Guy F. Atkinson Co., picked up all the marbles when it got a second chance to bid on the Corps of Engineers' Success Dam on the Tule River in California. First time around they were second to Green Construction Co., Des Moines, Iowa—$8.59 million to $6.54 million. But the Green bid was rejected when Congress failed to authorize the money last year. This time Atkinson bid $6.48 million to Green's second low of $6.59 million. Army Engineers said specifications were about the same as in 1957.

FIRST TAKER—Marblehead, Ohio, is the first beneficiary of the state's new loan plan to help communities solve water and sewage problems. The village (pop. 867) borrowed $17,000 to plan a new $100,000 filtration plant and water system. The loan will be repaid when construction bonds are sold.

DUTCH TREAT—Reclaiming a 25,000 acre swamp area north of Port Newark, N. J., will be a problem for those who should be most familiar with land reclamation—Dutch experts. Four engineers of Netherlands Engineering Consultants, The Hague, have started a study of the Hackensack Meadows. It will be paid for by a $13,000 gift from a group of New Jersey industrialists.

Two New High-Capacity Asphalt Plants Announced by Barber-Greene

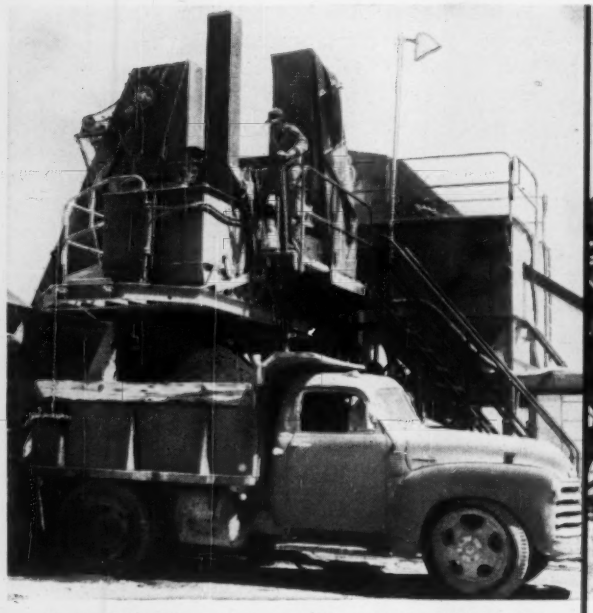
These two new continuous asphalt plants give greater versatility than ever before available. The same mixer, without alteration, may be used with any combination of plant components to produce all types of mixes—from the simplest cold mixes to the highest types which must meet the most rigid specifications. Model 847 is for high capacity. Model 848-A is for extra high capacity.

It is only necessary to transport and operate the components required for the job:

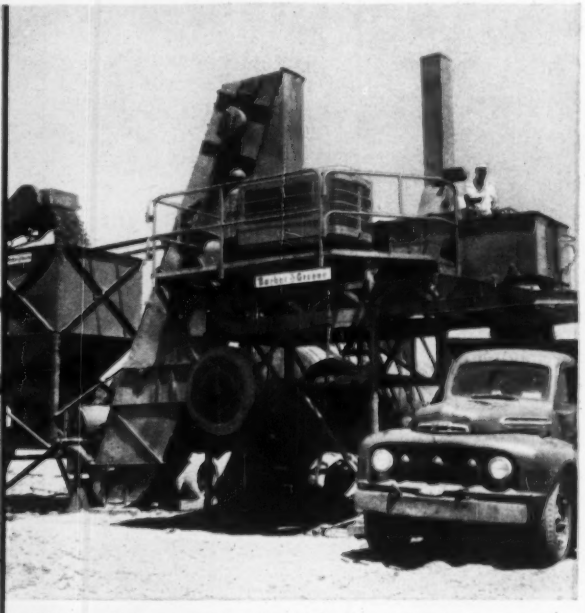
For cold mixes: Mixer + calibrated feeder

For intermediate hot mixes: Mixer + calibrated feeder + dryer

For high-type mixes: Mixer + gradation unit + dryer



Plant with four-bin gradation unit for production of highest type mixes. This multiple-aggregate plant is available in both sizes.



Cold-mix plant, available in both sizes, consists of mixer and calibrated feeder. Dryer and gradation unit may be added later.

Both models offer these advantages:

- Unequaled versatility as described above.
- New hydraulic clamshell discharge gate saves truck time, prevents segregation.
- Transfer pump assures constant head of asphalt for metering pump, eliminates need for asphalt storage tank on mixer.
- Interlocked aggregate and asphalt feeds assure constant, correct proportioning.
- Truck pit no longer required.
- Highly portable plant components allow fast travel between jobs, pay off in more days of operation per season.
- Erection is merely a matter of spotting the units at the plant site and dropping the jacklegs.
- New, easier calibration of single-aggregate and cold-mix plants.

Write for information on these two new flexible high-capacity asphalt plants. 57-12-A

Barber-Greene BG

AURORA, ILLINOIS, U.S.A.

CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

WASHINGTON OBSERVER

- A formula for issuing renewal grants
- Construction's defense contractors
- CAA needles cities on jet airports
- Higher highway user taxes coming?

● **Urban Renewal Administration has come up with a new formula for parceling out grants to cities.** Reason is that the agency has only $154 million left in the till, but has applications on hand totaling more than twice that amount.

The formula, based on 1950 population figures, is designed to fix a maximum on the amount any city can get. Without the new rule, only about one-fourth of the 112 localities with applications on file could receive any of the available funds. Officials say the new plan makes it possible for most of the communities to get some or all of the funds requested.

The hope is, of course, that Congress will vote more money into the urban renewal kitty next year. However, officials know they'll be running into the new budget-cutting drive at the White House.

● **Military construction contract awards last year** for SAC base dispersal, missile base construction, overseas airfields, and other big projects continued to keep construction companies ranking high among the Defense Department's leading contractors.

The Penatgon's latest listing of top contractors, covering 1957 new awards, includes these construction firms:

Merritt-Chapman & Scott Corp. (including shipbuilding and other non-construction work) $94.8 million worth of new orders; **Brown-Raymond-Walsh** (joint venture) $62 million; **Morrison-Knudsen Co.,** $48 million; **Oman-Farnsworth-Wright-Kaiser-Morrison-Knudsen** (joint venture) $45.8 million; **Kiewit & Sons,** $38.4 million; **Greenland Contractors** (joint venture) $36.8 million; **J. A. Jones Construction Co.,** $32.9 million; **Oman-Farnsworth-Wright** (joint venture) $26.4 million; **Bateson Construction Co.,** $23.5 million; **Pomeroy-Hawaiian-Bechtel** (joint venture) $19.8 million.

● **The U. S. wants local governments to plan now for airport needs in the jet age.** James Pyle, Civil Aeronautics Administrator, points out that jet airliners begin coming in soon—and will kick off an era of mass "bus-type" air travel. So he urges preparation of local "master plans" for airport improvement. Runways must be lengthened, but Mr. Pyle says pavement strengths won't be much of a problem.

● **Increased highway user taxes may be in the offing** to pump more money into the multi-billion-dollar road program. Budget Director Maurice H. Stans raised the possibility in his review of the federal budget (see page 182). More revenue from users will be needed to keep the highway trust fund solvent.

Accelerated building authorized in the 1958 Highway Act and rising construction costs make more taxation necessary if the program is to be kept on a self-supporting basis.

Congress lifted the pay-as-you-go amendment to the Highway Act for fiscal 1959 and 1960. But the Administration seems unwilling to add to the $12 billion-plus deficit estimated for the regular budget in the coming year. Observers expect a hike in user taxes that will add close to $1 billion a year to the trust fund.

US RUBBER CONVEYOR BELTS

Higher speeds, greater loads, longer life —with fewer belt plies!

The unusual thing about this self-propelled loader is the fact that it is equipped with a *4-ply* belt which is turning out a more satisfactory performance than the *5-ply* belt it replaced. This 4-ply belt is a U. S. Rubber Giant® (style EN), 54' long, and is doing such a good job that the operator is very well satisfied with its excellent performance.

The service is rugged—handling sand and gravel at speeds up to 700 fpm over small pulleys, under severe weather conditions, sun and ozone.

These belts—like all "U. S." belting—are engineered to always assure you of cost-saving performance and durability. Belts to service your requirement are available, right from stock, at your local "U. S." Distributor.

• • •

When you think of rubber, think of your "U. S." Distributor. He's your best on-the-spot source of technical aid, quick delivery and quality industrial rubber products.

US RUBBER

Mechanical Goods Division

United States Rubber

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

Rockefeller Center, New York 20, N.Y. In Canada: Dominion Rubber Company, Ltd.

Hiring Practices Get a Face Lifting

• Moves to correct construction hiring practices are producing some real results. But they're based on educated guesses—and may be wrong.

• If they're wrong, the penalties are very stiff.

• Two general approaches are now emerging. But the road ahead is filled with pitfalls . . .

Money talks. And it's talking now in the construction industry with a force that nothing else could have achieved.

That was apparent last week, when ENR surveyed current efforts to bring the industry's hiring practices into line with the law as now interpreted by the National Labor Relations Board. The board did two things:

1. Told the industry to get rid of the closed shop (which calls for the hiring of only union members) and to abandon union referral and contractor hiring practices that favor union members.

2. Threatened those who fail to conform with penalties that could bankrupt unions and contractors. This is talk the industry understands.

The progress so far has been surprisingly good. Contractors and unions have generally accepted the NLRB's clean-up mandate as the law at least until reversed or modified by the courts or Congress. They've given each other full cooperation in reviewing and amending their labor contracts—a process that is still going on. And the labor strife so widely predicted several months ago has not developed.

This alone is significant because NLRB's mandate involves the scrapping of half a century of tradition. Traditional practices gave AFL-CIO building trades unions in many areas tight control over the hiring of construction workers and also saved contractors time, effort and money in getting skilled and competent workers as their constantly fluctuating needs demanded.

But more significant than these are the far-reaching effects that are beginning to flow from the process of massive self-education the clean-up campaign entails.

Some contractors and unions, for example, are learning for the first time that there is such a thing as the Taft-Hartley Act and that it applies to them and their simplest activities. They're also waking up to the fact the hiring and firing of workers is a management prerogative that can't be surrendered.

The NLRB apparently has begun to realize that the construction industry is even more heterogeneous, different and complex than it suspected. And the feeling is growing that the Taft-Hartley Act perhaps can never be amended to fit the construction industry. This means drastic changes in legislative thinking may be required.

• A big stick—The NLRB mandate is deceptively simple. Essentially it requires that unions and contractors be able to prove in every instance that a refusal to refer or to hire a worker, or his dismissal, is not the result of discrimination based on the absence of union membership. However, it still allows room for the union shop clause in states without right-to-work laws, but it pulls into the mandate's dragnet union constitutions and by-laws, clearance cards, work permits, seniority clauses and any other oral or written practices that may result in discrimination. It vitally affects existing restrictions on the movement of union members into the jurisdiction of another local as well as labor contract clauses on subcontractors. It will require a new approach to personnel record keeping by many contractors.

The mandate is based on two cases —Mountain Pacific, which establishes an outline for legal hiring practices, and Brown-Olds, which is notable for its stiff penalty provisions.

Under Brown-Olds, contractors and unions are both liable for violations. Either one may be forced to fork over, in addition to the usual back-pay, all dues and assessments collected by the union while an illegal hiring practice is in effect. This represents a calculated risk many are reluctant to assume.

That is the big stick the NLRB now holds over the head of the industry. Whether it will ever be used, and to what extent, is a question in the minds of many.

The man who controls its use is the NLRB general counsel, Jerome D. Fenton, who has three times postponed its use. He now says it will be used after November 1, which marks the end of the latest and probably the last reprieve.

• No massive enforcement—The general counsel's control over the stick is limited. His office indicated last week that it will be exercised only on a case-by-case basis as unsolicited charges of discrimination are filed in the normal course of events. All he can do then is to refuse to permit a settlement that would dodge the penalty, file a complaint and urge the board to give the offending union and contractor the works.

So far, there's the inference, but no assurance, that the board will generally invoke the Brown-Olds remedy. Neither Mountain Pacific nor Brown-Olds, the validity of which are seriously questioned, has faced a court test. Mountain Pacific is now in the first stage of appeal. Brown-Olds can never be tested for procedural reasons until another such case arises—and the building trades are looking for a good test case to come along.

• A dilemma—Lack of a court decision and the fact that Mountain Pacific tells only in a sketchy way what has to be done to stay clear of violations, has put

the industry pretty much in the dark in overhauling its hiring practices.

Mr. Fenton did try to help by giving the industry a comprehensive analysis of the problem in July (ENR July 17, p. 108). But many feel he raised more questions than he answered and even enlarged upon the Mountain Pacific restrictions.

The result is that various segments of the industry, except for the United Construction Workers, which has never entered the recruiting field, are standardizing their hiring practices in different ways. This is due not only to differing interpretations of the law but also to a vast diversity in local customs and practices and in existing needs and philosophies.

• **Some trends**—Generalizations are difficult to make but two approaches with numerous variations are emerging:

• The legal, exclusive but nondiscriminatory hiring hall arrangement where workers are recruited through the union under complex criteria and standards. This is appearing in ironworker contracts and is the approach recommended to its local unions by the International Brotherhood of Electrical Workers.

• A relatively simple non exclusive referral system under which the contractor does his own interviewing and hiring. If a union is used for recruiting, it's only as one of several sources of labor supply. This seems to be preferred by many Associated General Contrator members and is the type principally used by the roofers union.

Those who prefer the latter approach say it looks safer. It may not be subject to the Mountain Pacific restrictions at all—although no one's yet sure. Even if it is, it tends to minimize the risk of being blamed for errors in a union operation that a contractor has no practical way of policing.

But this is only part of the picture. In some apparently isolated instances, the NLRB mandate is being ignored. This is variously attributed to failure to understand the significance of the problem, or to callous treatment of the mandate as "just another order from Washington," or to willingness to assume what in the past has been only a slight risk of getting caught.

• **Some fears**—Many of those who are toeing the line are filled with fears and misgivings.

In the contractor groups, some are saying the mandate may be setting in motion an unnecessary and unwarranted extension of the hiring hall system. They fear it may clutter up the hiring process with cumbersome and costly red-tape. And some predict it will promote lip service to the open shop, induce under-the-counter operation of a closed shop and put contractors in a tougher spot than before.

Unions are generally unhappy. The mandate violates basic traditions and upsets an effective production system, some way. What's more, they believe it will tend to dilute the skills of highly trained crafts, upset apprenticeship training, deprive local workers of the right to local jobs, swamp small unions with administrative problems, develop a corps of professional trouble makers, and, where Brown-Olds is applied, play havoc with union employee benefits such as insurance.

More optimistically, a few unionists hope it will prove to be a fruitful device for expanding union membership and establish a trend toward legal referral systems beneficial to the unions. One laborers union official, for example, already is thinking in terms of master hiring halls that could be established to pool the resources of all locals in a given area.

But, however the problem is analyzed, it looks like a Pandora's box that won't disgorge its full contents for some time.

Meanwhile, the industry is doing all it can. Under the leadership of contractor aasociations and international unions, it's revising its hiring practices on the basis of what, at best, are educated guesses.

WIDEST FINGER PIER in New York-New Jersey Harbor is now completed. Above it, another pier is taking shape. Brooklyn and Manhattan Bridges are in background.

New Pier Is Second of Ten

Last week, the widest finger pier in New York-New Jersey Harbor was completed and leased to a shipping line. The $5.9 million facility is the second to be completed of 10 new piers being built as part of the Port of New York Authority's seven year, $85 million redevelopment of a two mile section of Brooklyn waterfront (ENR Mar. 13, p. 42).

The two berth pier embodies a number of Port Authority concepts of pier building. For one, the 625 ft long, 350 ft wide structure contains a great number of low-capacity wood friction piles, instead of relatively few high-capacity point-bearing piles. Port Authority engineers find this is a more economical method of construction since it enables them to cast a simple, quickly produced concrete floor slab because of the small span between piles.

Another feature is the plentiful upland area to accommodate cargo-bearing trucks. The new pier, No. 2, has 142,000 sq ft of paved upland area to serve 168,200 sq ft of covered interior pier space. And for easy maneuvering during loading and unloading of ships, 30 ft wide aprons are provided.

Two World Groups Talk Power

Montreal: How to Meet Needs?

Rising demand for power all over the world in the face of dwindling sources was a recurrent theme in Montreal last week. What to do about it?

- Take a new look at low-grade energy sources we used to pass up.
- Get more out of what we have now by integrating production of hydro, thermal and nuclear power.

The occasion was the Canadian sectional meetings of the World Power Conference, an international body founded in 1924 that meets every six years to exchange information on energy problems. Forty-two nations from five continents and numerous islands sent nearly 900 participants.

Both sides of the Iron Curtain were represented. Russia's 19 man delegation, however, was the only sizable Communist group. Canadian participants numbered 342, U. S. 118, British 98 and French 60.

During four days of technical sessions, the conferees delivered, heard and discussed some 140 papers on the production, transportation and utilization of energy.

• Demand doubles every 10 years—Most papers dealt with particular geographic areas, but the basic problem was the same: Growing demand for power doubles the consumption every 7 to 10 years in most countries.

The trend to "firm up" hydroelectric production with thermal generation was evident, and the reverse was outlined in one paper.

T. Ingledow, president of British Columbia Engineering Co., Vancouver, concluded on the basis of experience with four 24,000 kw natural gas turbine generators at Port Mann, B. C., that gas turbine plants are more economical than conventional steam plants for firming up water power production of electricity. Even where thermal power is relatively expensive compared to hydro, integration of gas turbine plants with hydroelectric systems leads to economic gains. Gas turbines also provide quickly available stand-by power for outages and peak loads of short duration.

• Pumped storage economy—Thermal-hydro coupling in a different way was appraised by M. Ward, planning director of the Hydro-Electric Power Commission of Ontario. He said Ontario Hydro's pumped storage project on the Niagara River minimizes waste of off-peak energy, permits more economical loading of thermal plants, provides low-cost stand-by power and allows storage of energy over weekends and holidays. Annual savings are estimated at $2.4 million as compared to the alternative, conventional thermo plant, he said.

• Merits of large systems—The importance of regional systems incorporating both hydroelectric and thermal stations was stressed by two Russian engineers, L. O. Saatchjan and G. N. Lvalik. They said that large power systems permit more rational use of power resources, level the demands on power stations and thus cut the cost of power production in the long run. The Soviet engineers touched on the establishment of a single power system in European Russia and the possibility of a single system for the entire USSR.

• Hydro for peak power—The Japanese trend in combining water and heat power is shifting toward the use of hydro power for peak loads but in a basic thermal system, according to Noboru Mitani, Takashi Fujii and Motoharu Ishii. Reliance on thermal power in Japan is on the increase, they said, as a result of the gradual decrease of economical sites for hydro development and progress in high efficiency, large capacity thermal electric plants.

While Japan is not alone in seeing a limit to economic sites for development of hydro power, hydro is still the mainstay of the power systems of many countries, including Japan for the time being. All electric power in Tasmania is hydro and is likely to be for a long time. Four-fifths of Brazil's energy production is hydro now, and growth is likely to continue or increase the preponderance because most of the country's energy potential is hydraulic (discounting probable nuclear fuel deposits). India will rely on hydro for about 75% of its energy requirements for at least another two or three decades. A country-wide network that serves 92% of Portugal's power consumption is 99% hydro. Yugoslavia's energy output is more than half hydro. Italian power poduction is about 80% hydro as it lacks large supplies of fossil fuels.

(Continued on page 22)

Geneva: Where A-Power Fits In

The Russians came up with a surprise at the 69 nations Atoms for Peace Conference in Geneva last week. They showed films of a 100,000 kw nuclear power plant reportedly in operation in Siberia. Up to that time the Soviets gave no indication of having anything larger than a 5,000 kw plant, operating since 1954.

Outside of its size, Western scientists found not much to be impressed by in the plant. The low temperatures and pressures of the steam delivered by the reactor keeps the plant's power generation efficiency low. It is believed that the Siberian plant has a dual purpose, producing plutonium for military purposes as well as power.

The United States' largest reactor is the 60,000 kw plant at Shippingport, Pa. This will be increased to 100,000 kw after its next fuel loading.

Until the Soviets revealed their Siberian plant, there were only 12 reactors in the world known to be producing electricity for civilian use. The plants, one in Russia, eight in the U. S., and three in Great Britain, produced a total of only 200,000 kw, none of them competing economically with conventional sources of power.

The United States reported on the possibility of using nuclear blasts for big excavation projects.

Physicist Edward Teller told the conference recent American investigations increased expectations that thermonuclear explosions could be brought under control for earthmoving jobs, mining, and possibly electrical power production. Fusion rather than fission reaction is likely to play a prominent role in peaceful uses of nuclear explosives Mr. Teller said. That's because fusion fuels are reasonably cheap and result in lesser radioactive contamination.

Cost of excavating a 2,400 ft diameter harbor out of rock is estimated at $5 million—about one-tenth the cost of conventional methods.

American scientists reported that one problem in using atomic explosions peacefully is finding projects of sufficient size. Harbors and canals appear to be the most practical construction applications now. Technical problems remaining involve the containment and direction of energy, control of destructive effects and radioactivity.

The use of radioactive gold for measuring flow rates of water and other liquids was also reported by Donald E. Hull of the California Research Corp. Any flow rate from a faucet drip to a cataract can be measured by geiger counter measurement of the isotopes introduced into the stream. A simple formula to convert the reading to flow rate can also be used for industrial, sanitary and irrigation applications, he said.

(Continued from page 21)

• **Must use low-grade fuels**—The lack of coal and oils is, of course, a powerful determinant against thermal generation of electricity in any country, and what to do about the lack received considerable attention at the conference.

Two papers outlined Polish efforts to utilize high-ash brown coal. In Germany the mining industry is taking steps to reduce its own consumption of coal (now about 10% of total output) by burning low-grade coals in large efficient power plants. India is facing up to the necessity of reducing consumption of high-grade coal, partly by substituting low-grade non-coking varieties and lignite and partly by eliminating small inefficient power plants.

• **Nuclear demand forecast**—Nuclear power is not now a major element in any nation's energy production, but its early advance to such a position is envisioned by W. B. Lewis, vice president for research and development, Atomic Energy of Canada, Ltd. Mr. Lewis predicts the demand for nuclear power in 1980 will be in the range 150 to 500 million kw. This compares to generation of nuclear-fueled electric power of about 300,000 kw at the present time.

Great Britain's experience with nuclear reactor systems at Calder Hall, source of most of the world's output of nuclear power, was reviewed by Sir Christopher Hinton and L. Rotherham, both of the Central Electricity Generating Board. They reported that the main lessons learned were: "Visual aids to control should be provided in preference to indicators, lubrication should be provided wherever necessary in preference to dry surfaces of dissimilar metals, and location of some moving parts required improvement."

• **U. S. nuclear plants**—U. S. nuclear power programs were reviewed by James F. Fairman, senior vice president of Consolidated Edison Co. of New York, Inc. About 100 public utilities have formed groups to build and operate nuclear power plants with assistance from the Atomic Energy Commission, he said. Twenty-one groups are constructing 18 power plants with a combined capacity of 1.5 million kw and at a total cost of $500 million to the organizations.

Three financing arrangements for the U. S. reactor projects are: The independent industrial program, in which the participants bear the whole cost; the power demonstration reactor program, with the AEC contributing in various ways; and the AEC reactor development program, financed entirely by the federal government for the purpose of developing promising reactor types.

$12 Million Salt Lake Plan Eyed

An advisory committee to the Utah State Road Commission has proposed a $12 million road and dike program that might transform the eastern end of Great Salt Lake into a semi-fresh reservoir.

The dikes would link two islands with each other and the mainland, creating a north-south divide across the lake. Fresh-water streams emptying into the eastern section might eventually sweeten that part of the lake considerably. The west is surrounded by desert. The area sealed off by the dikes would cover 271,000 acres.

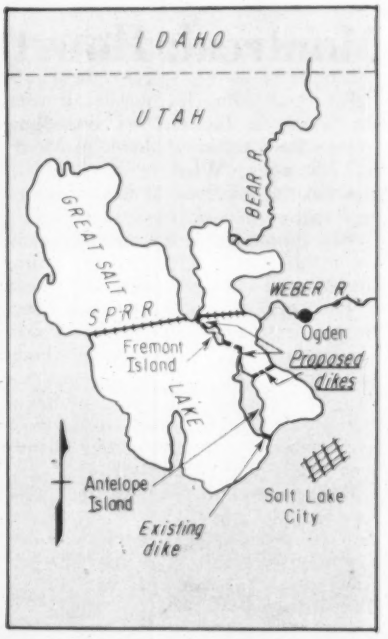
A major factor influencing the committee's decision is the recreational potential of the two islands—Fremont and Antelope. Little used at present, they could be developed as state parks.

The project as recommended includes raising and widening an existing 3 mile dike, constructing 15 miles of new dikes and building 45 miles of new roads.

Connections would be included to existing mainland routes north, south and east of the lake.

Sealing off sections of the eastern end of Great Salt Lake was studied as long ago as 1930 and declared feasible from an engineering standpoint. Prospects for fresh water inflow—vital for freshening the lake—dropped abruptly in 1949, however, when the federal Bureau of Reclamation originated the Weber Basin Project. This undertaking reserves virtually all the available water in the river for a big low-level irrigation reservoir.

Even with the diking system, the water would not become sufficiently free of salt for domestic use, irrigation and many industrial processes. Some industries could use it, however, and it would be more acceptable for recreational purposes.



Dames & Moore, soil mechanics engineer, and Caldwell, Richards & Sorenson, consulting engineer, both of Salt Lake City, concluded in a new study for the present advisory committee that the reduced amount of fresh water available rules out the possibility that the southern part of the sealed off area will freshen. They recommend that the other area be studied in more detail.

East Gets First Desalting Unit

The New York State Thruway has bought a saline water conversion unit for use at a Thruway restaurant whose only supply of water is highly mineralized. The installation will be the first commercial use of desalting in the East.

And in the West, Southern California Edison Co. announces it will construct a pilot conversion plant to use waste heat from thermal power generation.

The restaurant desalter, built by Ionics, Inc., Cambridge, Mass., will remove 200 lb of salts in treating 12,000 gallons of brackish water a day. The plant will cost $42,500. It is expected to produce water at an operating cost of about $0.50 per 1,000 gallons. The restaurant has been buying bottled water for drinking and cooking, paying $1.00 for each 5 gal bottle. Its monthly water bill has been running between $300 and $450. This, plus the corrosion of mechanical equipment using the mineralized water, made the desalting unit competitive.

In California, Southern California Edison Co. will build a $100,000 pilot seawater conversion plant adjacent to its Mandalay Steam Station, now under construction. The company's research will center on the use of heat now unused in its generating plant.

Processes to be studied will take partially spent steam from the last stages of a steam turbine and use its remaining heat to evaporate seawater under various conditions to produce potable water. The converted seawater —although more costly than available fresh water—is expected to be used to meet part of the steam plant's fresh water needs.

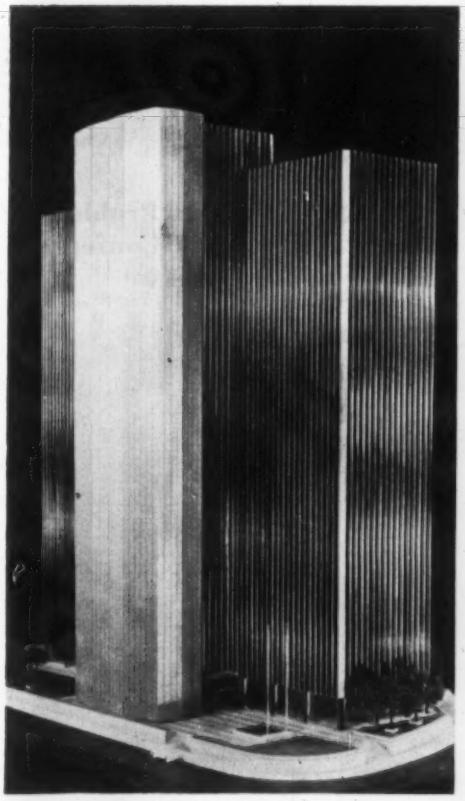
Colored Aluminum Covers Auditorium Dome

Aluminum roofing in four colors caps the dome atop a $4 million municipal convention hall and pubic auditorium in Austin, Tex. About 63,000 sq ft of roof are covered by the aluminum sheet.

The metal is colored integrally with two shades of green and a soft gray. In addition, some areas are being left with natural finish.

The dome spans 270 ft and has a rise of 41 ft; the crown is 78 ft above ground level.

Jessen, Jessen, Millhouse & Greeven, and Page, Southerland & Page—both of Austin—were associated architects for the project. John J. Stokes Construction Co., San Marcos, Tex., is the general contractor.



And Then There Were Four

This 22-story building will be the fourth stainless steel-clad structure to become part of Pittsburgh's "Gateway to the West." It will cost $16 million. George A. Fuller Co. is the contractor. The architect is Harrison & Abramovitz. Both are New York City firms.

The Bridge on the River Fell

No warning was given to operator Vernon Kuehn of Topeka, Kan., before this bridge collapsed under his wrecking crane. Mr. Kuehn was demolishing the 150 ft long bridge with an iron wrecking ball when he suddenly found himself, alive but astonished, with his crane in the river.

Industry Splits on ASA Housing Code

Four groups sponsoring national model building codes announced their opposition last week to an American standard building code for one and two-family houses.

The Building Officials Conference of America, International Conference of Building Officials, Southern Building Code Congress and National Board of Fire Underwriters voiced their objections at a conference held in New York City under sponsorship of the American Standards Association. The meeting was held to determine whether or not the homebuilding industry wants a standard code. In a vote taken before the conference adjourned, a heavy negative vote against establishment of a standard code was registered. However, there were more votes (24) for the proposed ASA project than against it (17), and some ballots will be received later by mail. When all votes have been received, the ASA will decide whether a consensus has been reached.

The conference was attended by representatives of 83 organizations connected with homebuilding. Opinions of those unable to attend were expressed in letters and telegrams.

• **Sponsors' viewpoint**—Among the many sponsors of a standard code are the American Institute of Architects, Building Research Advisory Board, Building Research Institute, Construction and Civic Development Department of the U.S. Chamber of Commerce, Home Manufacturers Association, National Association of Home Builders and the National Retail Lumber Dealers Association.

They argue that establishment of an American standard code for one and two-family houses will lead to uniform regulations throughout the country and result in better houses at less cost (ENR July 31, p. 25 and 92).

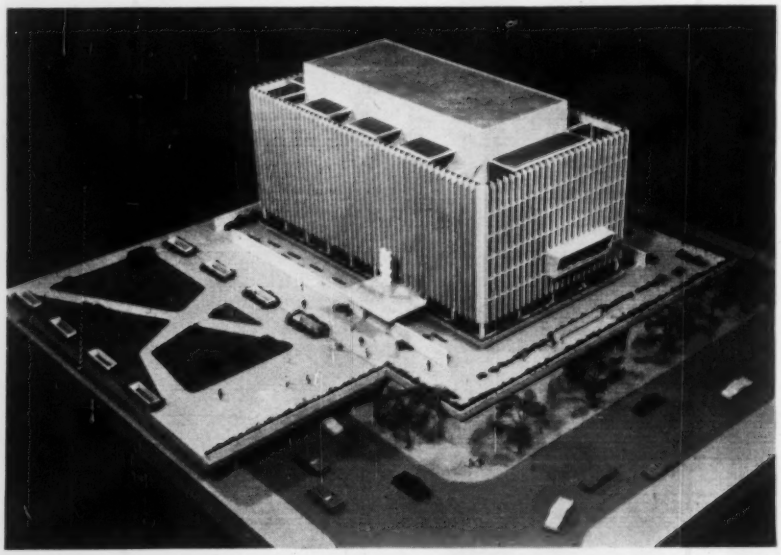
• **Objectors like code competition**—The four sponsors of national model building codes sparked the opposition, which included some material-producer associations. They claim the proposed standard would become a fifth model code and not bring uniform regulation any closer, even if such standardization were desirable.

M. L. Clement, executive director, Southern Building Code Congress, contended that a national standard code would lead to federalism. Ben Saltzman, vice president, Building Officials Conference of America, argued that competition between model codes was desirable; it stimulates progress. Furthermore, said William G. Wharton, BOCA president, building-materials producers favor such competition.

Hal Colling, managing director, International Conference of Building Officials, pointed out that the National Electrical Code and National Plumbing Code are American standards and they have not been generally adopted. So, he said, there is no certainty that the proposed standard code will be generally accepted just because it was approved by ASA.

The building officials and several other opponents of a standard code urged adoption of one of the good model codes now available as the solution to the problems created by archaic regulations and variations in requirements in neighboring communities.

A consensus—not unanimity or majority vote—is required by ASA for initiation of a project.



Campus Will Span City Streets

Site clearance began this month for construction of an additional two-block East Campus at Columbia University in New York City. The $17 million development will connect with the existing campus by landscaped plazas above the street that runs between the two areas.

A $7 million School of Law will be the first structure erected in the development. A dominant feature of the new building will be vertical louvers, seldom found as far north as New York. The eight-story building will be air conditioned and insulated from outside noise. It will, in effect, have two street levels, with the campus level over the city traffic, to the advantage of both.

Harrison & Abramovitz, New York City, is the architect for the development. No general contractor has been chosen.

Skid Prevention Problem Gets First World Conference

Skidding—an important factor in highway accidents—was discussed at the First International Skid Prevention Conference held at the University of Virginia, Charlottesville, last week.

Work was reported on anti-lock brake devices for greater control during rapid deceleration. Other work indicates that a major part of frictional resistance arises from hysteresis losses—energy lost as heat—in the rubber of a tire. As for road surfaces, limestone was found to contribute to slipperiness.

Two weeks before the conference, seven different field test devices measured four road sections for slipperiness. Preliminary results indicate that data taken by these different methods can be correlated. This should enable highway engineers to compare results of various research groups from related data.

In keeping with a suggestion that standard skid test cars be used as an interim means for evaluating surfaces and materials by all road agencies, the U.S. Bureau of Public Roads test trailer is being made available. The conference was organized by T. E. Shelburne, director of research for the Virginia Council of Highway Investigation and Research.

Water for the U.S. Air Force Academy

29,000 feet of Armco Pipe delivers water across rough mountain area

The United States Air Force Academy, like hundreds of American cities, relies on Armco Welded Steel Pipe for water supply lines. Shown here is part of the 29,000 feet of Armco Pipe being installed to carry water from Colorado Springs to the Air Force Academy. This water line was laid in the winter over rough mountain terrain. Even so, the job was completed on schedule.

Armco Pipe can help solve *your* water supply problems too. You can choose from diameters of 6 to 36 inches; wall thicknesses from 9/64- to ½-inch. Write us for information related to your particular requirements. Armco Drainage & Metal Products, Inc., Welded Pipe Sales Division, 3348 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

ARMCO WELDED STEEL PIPE

Concrete arches were formed by 22 ton half arches and bolting them together.

Precast Arches for Gym Span 132 Feet

Long-span reinforced concrete arches for a western Pennsylvania school were fabricated 250 miles away and trucked to the site in sections weighing 22 tons apiece. There, they were speedily erected with three cranes.

The arches form the framing for the gymnasium of the Laura Lamar Joint Junior-Senior High School now being built in Homer City, Pa. All framing above ground level for the school is high-strength precast concrete. The concrete has a 28 day compressive strength of 6,000 psi.

• **Why precast?**—The architect says he chose precast concrete for this project because he considered it the most economical method of producing a fireproof building. He had recently completed a 500 unit housing project for which the bid for a precast-concrete alternate design was 5% less than the bid for wood-and-plaster construction. Steel framing was ruled out because steel mills were quoting 24 months' wait for delivery while the building was being designed.

The over-all design of the school was dictated by the sloping terrain of the site—the building steps down as the ground drops off. As a result, most of the school is two or three stories high.

Its precast concrete columns were erected in two-story lengths. Precast panels 4 ft deep by 22 ft long were welded to them and to the front face of spandrel beams. These beams also support precast concrete joists for floors and roof.

• **Three-hinged arches**—Seven arches were required for the gym. Spaced 22 ft c-c, they span 132 ft between pin supports on concrete abutments at ground level. Length along their parabolic axis is 150 ft, and rise is 34 ft.

In cross section, the arches are 20 in. wide, 30 in. deep. Reinforcement consists of six No. 9 top bars, six No. 10 bottom bars and two No. 6 bars near the middle of each side and stirrups. Additional No. 9 bars were inserted at connections and lift points.

At each hinged end, the arches also are reinforced with a 2 ft length of a 21 WF 142 steel beam. The hinge was attached to the exposed end of this beam.

For convenience in shipping and erection, the arches were fabricated in two equal lengths and assembled at the site. A truck and trailer transported the 75 ft long segments, which weigh 22 tons each, from the fabrication plant in Berlin, N. J., to Homer City.

At the site, the arches were assembled with the aid of three cranes. Two cranes set each half arch on its abutment, where it was attached with a 4 in. steel pin. One crane then rotated the half arch into its final position and held it while the other two cranes readied its mate.

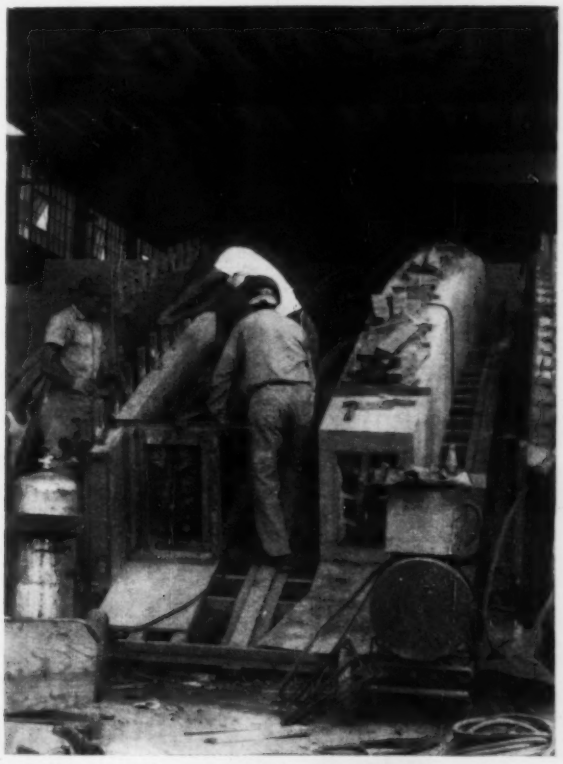
The final connection at the crown was made by bolting plates to the exposed ends of short 21 WF 142 beams embedded in the crown sections of the half arches.

The first arch erected was guyed for stability to nearby precast framing already in place. As soon as a second arch was assembled, the two arches were tied together with temporary steel bracing. Then, a permanent connection was made: Precast concrete purlins were placed between the arches and welded to seat brackets on them.

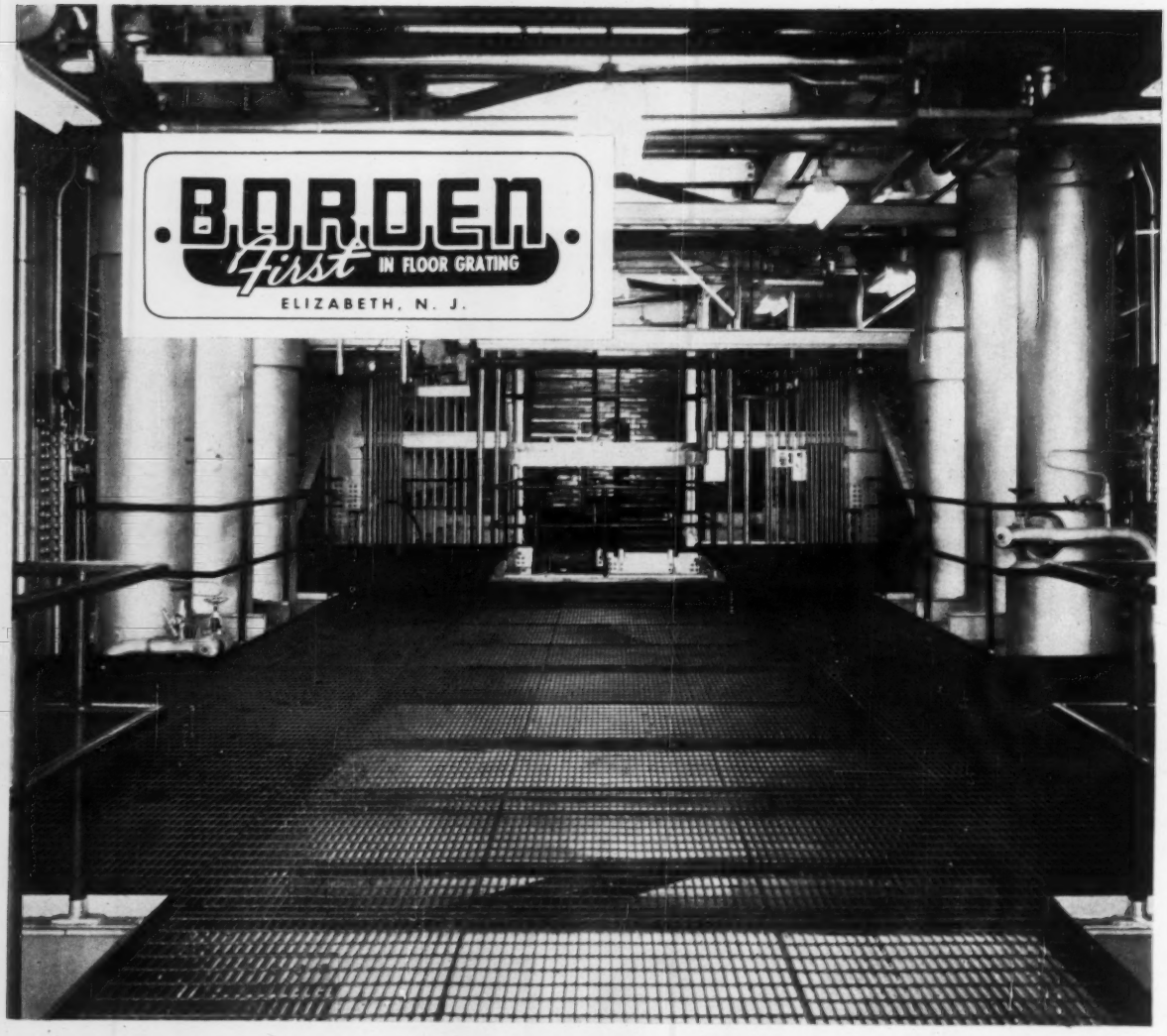
Ehrlich & Levinson, Philadelphia, is the architect. Branna Construction Corp., Pittsburgh, is the general contractor. Formigli Corp., Berlin, N. J., holds the subcontract for the precast concrete.

Half arch 75 ft long was transported 250 miles by truck and trailer from plant to Homer City, Pa., site.

CROWN END of half arch is reinforced with steel beam, which has bolt holes for connection with mating half arch.



CURVED FORMS were used for the soffit of the arches, which were cast in vertical position, side by side.



BORDEN MANUFACTURES EVERY TYPE FLOOR GRATING

IN FERROUS AND NON-FERROUS METALS

- **EASY TO INSTALL** — engineered in conveniently sized units for easy installation.
- **EXTRA STRONG** — reinforced, designed with maximum safety factor.
- **LIGHT WEIGHT** — approximately 80% open, reduces dead weight, allows greater live load.
- **SELF-CLEANING** — creates greater safety, economy of maintenance, no sweeping or washing required.

Write for complete
information on BORDEN
All/Weld, Pressure Locked, and Riveted Floor
Gratings in this FREE 8-page catalog

BORDEN METAL PRODUCTS CO.

815 GREEN LANE Elizabeth 2-6410 ELIZABETH, N. J.

Plants at: UNION, N. J., LEEDS, ALA.
CONROE, TEX., BEETON, ONT.

BORDEN METAL PRODUCTS CO.

Gentlemen:

Please send me BORDEN Catalog

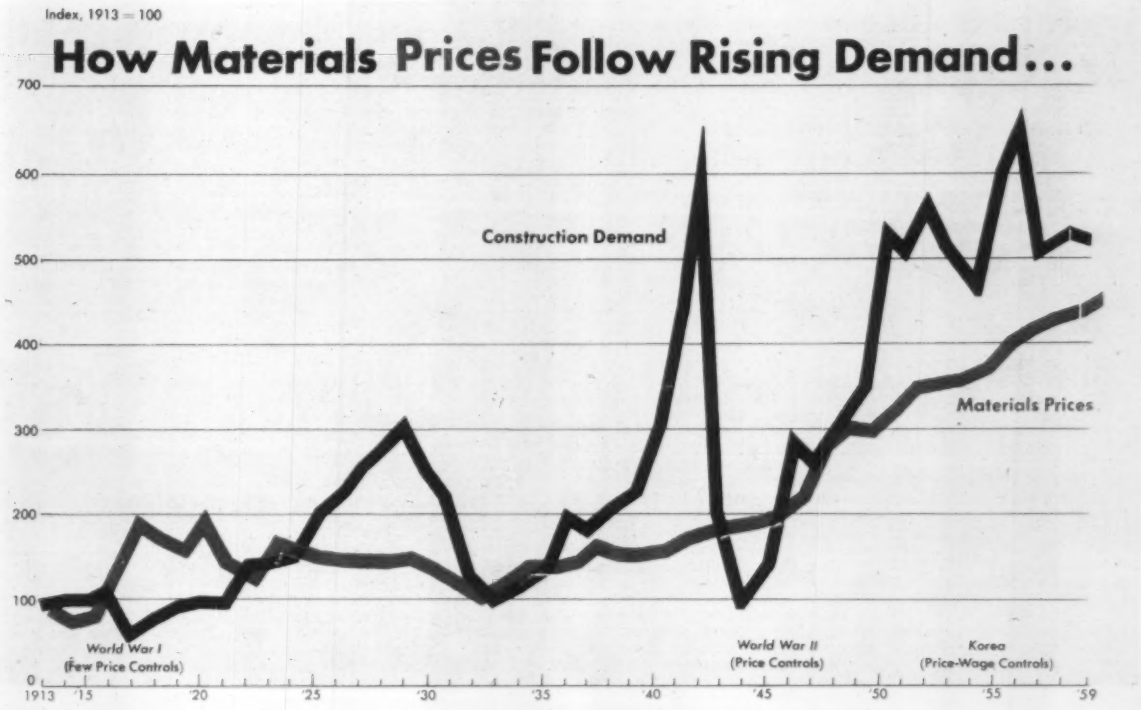
NAME .....

TITLE .....

COMPANY NAME .....

ST. AND NO. .....

CITY AND STATE .....



Outlook: Still Higher Materials Prices

RISING costs, increasingly a danger sign for construction men, are casting an even longer shadow since construction demand has bounced out of its recession and is steaming along at the second highest annual rate in history.

Steel and lumber prices have already gone up and it's likely many other materials also will rise.

Several months ago, contractors were concerned with wages as the only major cost escalator and were looking hopefully for stable or lower materials prices. Now they must reckon with the new uptrend in materials.

How inexorably this materials price trend is moving upward is shown on the chart above. Only a few reversals have developed during periods of lower demand (as measured by a drop in ENR's Heavy Construction Volume Index). In fact, slowdowns in construction activity have meant only slowdowns in the materials price rise.

The pages that follow are designed to help you judge the degree and direction of these price trends.

Materials and Equipment Cost Reports

Price Rise Slowdown Is Temporary 30
Materials Price Stability Ends 34
Cost Trends Around the World 42
Equipment Prices Holding Steady 48
Rental Rates for Equipment 49

Other Cost Reports

Building Prices Face New Push 54
Competition Trims School Costs 59
What Engineering Services Cost 60
Heavy Construction Cost Indexes 63
'58 Wage Boosts Trail '57 64

Special Features

Cost Estimating in Depth Pays Off 69
Electronic Bid Openings Prove Out ... 77
How to Get Better School Cost Data 78
Steel Fasteners Cost Compared 82
Rippers Cut Costs by a Third 84

Price Rise Slowdown Is Temporary

The construction industry has a lot to shout about. The roughest recession in heavy construction contracts during the post World War II period is over. But wary contractors are watching the news from the construction materials front.

In recent weeks, this news has not been good. Prices of major materials such as steel and lumber have increased. More lumber increases are likely and other construction materials will probably join the parade to higher prices.

Each of the three basic construction materials is higher than a year ago: Structural steel is up 4.3%; Douglas fir 2 x 4's are up 1.8%; southern pine 2 x 4's are up 1.1% and portland cement is up 0.9%. Moreover, most other major materials are also higher: sand, ready-mixed concrete, crushed stone, concrete blocks, concrete sewer pipe, structural clay tile, brick, lime, and fir plywood. Only a few items are priced lower today than a year ago: clay sewer pipe; rock wool insulation; gypsum and fiber board sheating.

By contrast with the sprinkling of price reductions in the early months of '58, there have been very few cuts in the last couple of months. A slight trimming of cement prices in three of the ENR 20 cities resulted from the repeal of the 3% federal tax on freight. However, dealers in three other cities raised prices in July or August by greater amounts than the reductions in the other three cities. These cement increases, plus second quarter hikes in four cities, offset the few reductions and push the U.S. average price to a new record high.

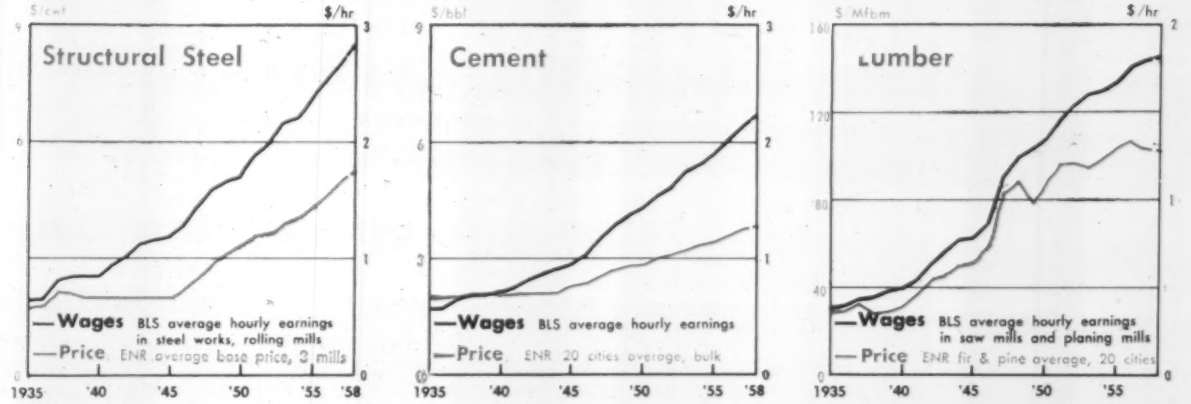
The trend in 1957 and early 1958 proves again how sticky materials prices behave in the face of lagging demand. The chart above shows the price rise losing momentum, but there is no reversal of the nine-year uptrend. This series, the Materials Cost component of the ENR Construction and Building Cost Indexes, is based on structural steel, cement and lumber. Most other materials prices, on the average, follow their lead (see page 34). Only four times in the last 30 years has this price indicator turned down.

The increased momentum of the new materials price rise shows up as the gap between the top of the second quarter '58 block and the bottom of the third quarter block in the chart above. The fact that this third quarter block did not expand after establishing the "breakaway" gap indicates that momentum of the new upswing is not as great as, for example, the last main rapid upswing in prices during late '54 through most of 1956.

ENR forecasts that the new uptrend in prices will set a slower pace than in the '54-'56 rise. By December 1960 the materials cost component of the ENR cost Indexes is expected to rise about 3% above the current level. During the following five years ending December '65, materials prices are forecast to rise at a faster clip and add 11% to 12% more to prices.

The rise is expected to accelerate again after 1965. By December 1970, materials cost component of the ENR cost indexes is forecast to add 17% to December '65 prices. This forecast would mean that in December 1970, materials prices will be 34% higher than they are now.

This acceleration in the construction materials price uptrend is based on these expectations: Construction demand will pick up slowly in '59 and '60, accelerate a little in the early 1960s, and then rise sharply in the late 1960s. An explosive construction boom in the late '60s is expected to put a heavy strain on our materials production capacity.


$/cwt
$/hr
Structural Steel
—Wages BLS average hourly earnings in steel works, rolling mills
—Price ENR average base price, 3 mills
1935 '40 '45 '50 '55 '58
$/bbl
$/hr
Cement
—Wages BLS average hourly earnings
—Price ENR 20 cities average, bulk
1935 '40 '45 '50 '55 '58
$/Mfbm
$/hr
Lumber
—Wages BLS average hourly earnings in saw mills and planing mills
—Price ENR fir & pine average, 20 cities
1935 '40 '45 '50 '55

Labor Costs: Culprit Behind Rising Materials Prices

Rapidly increasing costs of production labor are primarily responsible for pushing prices of basic construction materials higher and higher. Though steel mills and cement mills have made great advances in raising productivity by mechanizing operations, wage costs have risen much faster than worker output. This factor, plus higher costs of machines, plants, raw materials, transportation and taxes have caused prices of the three key materials to soar.

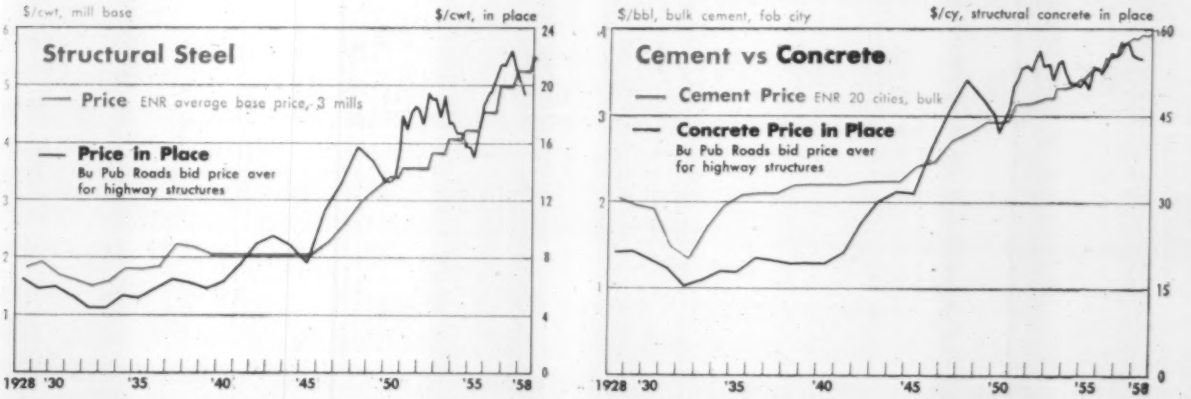
The base price of structural steel at the mill has climbed by 197% since 1935 to the current record high. Average hourly earnings of steelworkers increased 333% over this period, according to U. S. Bureau of Labor Statistics figures, which exclude fringe benefits. Adding fringe benefits would put the increase closer to 400%.

Cement prices in the last 23 years have increased by 91%, according to the ENR 20-cities average. By contrast, average hourly earnings of cement workers are up 294%, based on BLS figures which exclude fringe benefits.

Lumber prices show a similar picture, though they are notably different from cement and steel because they react swiftly and emphatically to changes in demand. ENR's 20-cities average of Douglas fir and southern pine prices climbed by 243% during the last 23 years. But average hourly earnings of workers in saw mills and planing mills increased by 370%. Lumber is now a little below its 1956 record high. But even then the price rise of 257% since 1935 was much less than for labor costs.

While these comparisons are perhaps an over-simplification of the impact of rising costs on materials prices, the cause and effect relationship is clear. Moreover, there seems no end in sight to the relentless rise in wage rates in excess of amounts justified by productivity increases. This practically insures a continuing wage-price spiral in these key materials and others as well.

There are some exceptions (like plywood, p. 36). But the majority of construction materials are facing the same future as cement, steel and lumber.


$/cwt, mill base
$/cwt, in place
Structural Steel
— Price ENR average base price, 3 mills
— Price in Place
Bu Pub Roads bid price aver for highway structures
1928 '30 '35 '40 '45 '50 '55 '58
$/bbl, bulk cement, fob city
$/cy, structural concrete in place
Cement vs Concrete
— Cement Price ENR 20 cities, bulk
— Concrete Price in Place
Bu Pub Roads bid price aver for highway structures
1928 '30 '35 '40 '45 '50 '55 '58

Price in Place Follows Basic Materials Price

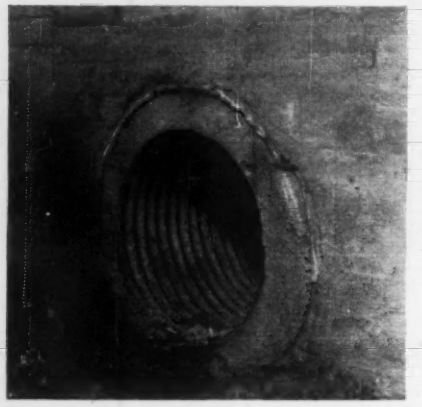
Prices on construction materials put in place are sensitive to changes in demand even though the price of the basic material used may be "sticky."

The charts above show how this is true for structural steel and structural concrete. Average unit prices bid by contractors on federal-aid highway projects are compared with the price contractors pay for structural steel shapes at the mill and portland cement, in bulk, fob, ENR 20 cities.

While the bid prices of steel and concrete put in place move up or down as demand increases or decreases, these prices follow the trend of the basic materials price. The movements of the price-in-place curve above or below the basic price curve reflect the extremes in demand and their by-products: shortages on one hand; readily available supplies on the other.

During the stiff competition for highway work late in '57 and early '58, bid prices for steel and concrete dropped. But the price of the basic materials, structural steel and Portland cement were moving to new record highs. Now that highway awards are once again on the boom track, prices of these materials put in place probably will move in the second half of '58.

REPUBLIC DRAINAGE STRUCTURES



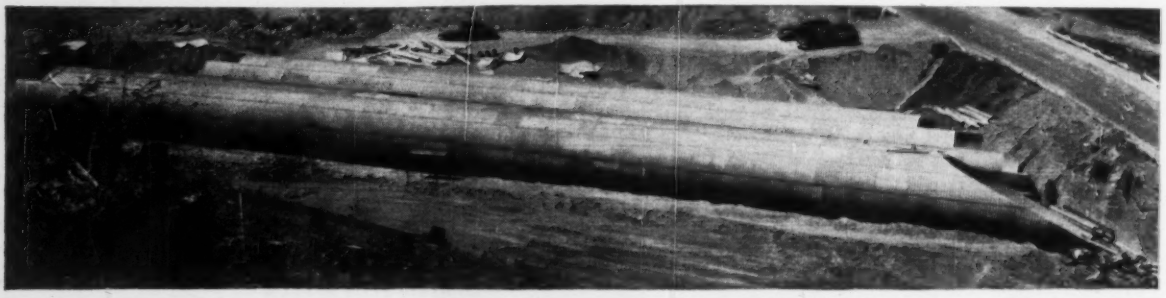
"Threading" Republic Corrugated Pipe is a process that can return big savings. This was the case near Falls City, Nebraska, where a 36"-diameter, 116-foot long concrete pipe culvert started to collapse. The installation was restored by threading through a 30-inch, 14-gage Corrugated Pipe in 4-foot sections. It will pay to reline all concrete drainage structures, now, before they have deteriorated too far to make possible an easy, economical threading operation with long lasting Republic Corrugated Metal Pipe.

Best for 90% of all water run-off applications

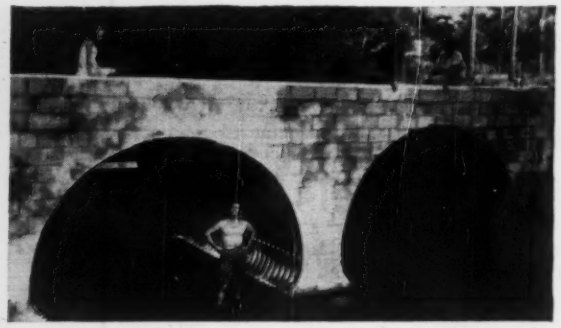
On 90% of all drainage jobs, Republic can provide the best solution from a complete line of drainage products in a wide range of types and sizes. These Republic products include Sectional Plate Pipe, Pipe-Arch, and Arches, as well as Riveted Corrugated Metal Pipe and Pipe-Arch; Plain Galvanized, Asphalt Coated or Asphalt Coated and Paved, and FREE FLOW Sewer Pipe, with or without Asbestos Zinc Clad Base.

In addition to on-the-job construction economies, Republic Drainage Structures provide excellent long term reliability. Made from resilient, galvanized, heavy gage steel—corrugated for added strength—they won't crack, crumble, or spall under impact, vibration, or shifting fill.

The illustrations below show a few of many possible applications using Republic Drainage Products. Mail the coupon for complete information, or contact the Drainage Products Manufacturer nearest you.



Even big jobs like this Republic Sectional Plate Pipe installation at Dummerston, Vermont, are easy to handle, easy to erect in any weather. Two 180-inch diameter Sectional Plate Pipes, 270 feet long, were installed during relocation of U.S. Route 5. A single order covers all required materials—bolts, nuts, washers, and pre-cut, pre-punched Sectional Plates. Once in place, you can forget Republic Sectional Plate Structures.



Minimum "road closed" time was a major consideration when a failing bridge required replacement in Hillsborough County, Florida. Sectional Plate Pipe-Arch provided the perfect answer, plus maximum economy. Twin Sectional Plate Pipe-Arches were quickly and easily erected after the old bridge was torn out and the creek diverted through a temporary corrugated metal pipe. Headwalls and backfilling were completed, road surfaced—and the new bridge opened to traffic just 72 hours after work began.

Nearly a half century of service and still in good condition is the record of this Republic Nestable Corrugated Pipe. The 12-gage, 60-inch diameter, 86-foot long culvert has carried the heavy truck traffic of U.S. Route 224 in Portage County, Ohio, for 46 years. Even though the road has undergone many major changes and repairs during these years, and the concrete headwalls have completely crumbled away the culvert has required no maintenance. You can expect this type of long, trouble-free performance from all Republic Drainage Products.

Manufacturers of Toncan Drainage Products

Bark River Culvert & Equipment Co.
Escanaba, Mich. • Ironwood, Mich.

Beall Pipe & Tank Corporation
Portland, Ore. • Boise, Idaho

Bluegrass Pipe & Culvert Co.
Louisville, Kentucky

The Boardman Co.
Oklahoma City, Okla. • Tulsa, Okla.

Central Culvert Corporation
Alexandria, La.

Choctaw, Inc.
Memphis, Tenn. • Birmingham, Ala.

Dominion Culvert & Metal Corp.
Roanoke, Va.

Eaton Metal Products Corp.
Omaha, Neb. • Hutchinson, Kan.

Eaton Metal Products Company
Billings, Mont.

Empire State Culvert Corp.
Groton, N. Y.

Illinois Corrugated Culvert Co.
Peoria, Ill.

Jensen Bridge & Supply Company
Sandusky, Mich.

H. V. Johnston Culvert Co.
Minneapolis, Minn. • Aberdeen, S. D.

Logansport Metal Culvert Co.
Logansport, Ind.

M & M Hiway Materials Co.
Columbia, Mo.

North Dakota Metal Culvert Co.
Fargo, N. D.

Northeastern Culvert Corp.
Westminster Station, Vermont

Pacific Corrugated Culvert Co.
Temple City, Calif.

The Pedlar People, Ltd.
Oshawa, Ont.

Republic Steel Corporation
Culvert Division
Canton, Ohio • Harrisburg, Pa.
Charlotte, N. C. • Hammond, Ind.

Spokane Culvert & Fabricating Co.
Spokane, Wash.

Thompson Pipe & Steel Company
Denver, Colo.

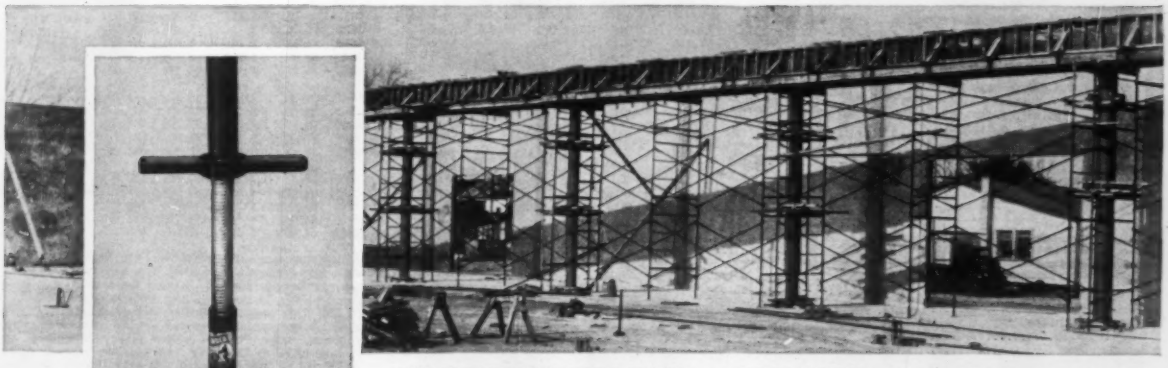
Tri-State Culvert & Mfg. Div.
Florida Steel Corp.
Tampa, Fla. • Decatur, Ga.

Utah Culvert Company
Ogden, Utah

Wisconsin Culvert Company
Madison, Wis.

Wyatt Metal & Boiler Works
Dallas, Tex. • Houston, Tex.

REPUBLIC PIPE PRODUCTS proved best on a large percentage of construction projects. Used for permanent and temporary piling, fluid-handling systems, drainage lines, and countless mechanical applications, Republic Steel Pipe provides strength, easy workability, initial low cost. Uniform physical characteristics permit easy field threading, bending, and welding. These characteristics combine to provide maximum economy on first installation and long-term costs. Republic Pipe Products include Continuous Weld and Electric Resistance Weld Types in a complete range of sizes. Consult your distributor for complete information, or mail the coupon.



THIS REPUBLIC ROLL-THREADED PRODUCT saves 22% for The Waco Manufacturing Company, Cleveland, Ohio, over the machined screw formerly used. The product is an adjustment screw used with the company's tubular steel scaffolding. Republic's Bolt and Nut Division produces a wide variety of headed and threaded products for the construction industry including a complete line of high-strength structural bolts and anchor bolts. Send coupon for data.

REPUBLIC STEEL

World's Widest Range of Standard Steels and Steel Products

REPUBLIC STEEL CORPORATION
DEPT. EN-6392
1441 REPUBLIC BUILDING • CLEVELAND 1, OHIO

Send more information on:
- ☐ Drainage Products
- ☐ Pipe Products
- ☐ Headed and Threaded Products

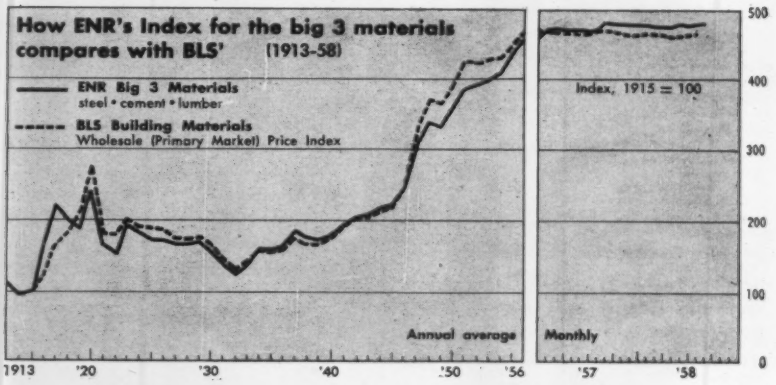
Name_____ Title_____

Company_____

Address_____

City_____ Zone____ State_____

Materials



Construction materials prices are marching upward again after about nine months of stability.

ENR's Materials Price Index—a composite of structural steel, cement and lumber—began a slowly accelerating climb last May. Sharp increases in structural steel and lumber prices during recent weeks pushed this index to a record high, 4% above April and 3% more than September a year ago.

A May upturn is recorded also by the Wholesale (Primary Market) Building Materials Price Index computed by the U. S. Bureau of Labor Statistics, based on the 38 major categories shown in the table. From a

Price Trends for 19 Construction Materials

Prices reported monthly by Engineering News-Record

	August Prices						Per Cent Change 8/57-8/58
	1953	1954	1955	1956	1957	1958	
Structural steel (average 3 mills), per cwt	$4.100	$4.250	$4.600	$4.600	$5.275	$5.500	+4.3
Reinforcing bars (average 3 mills), per cwt	4.150	4.300	4.650	5.075	5.425	5.675	+4.6
Cement, bulk, per bbl†	3.330	3.446	3.555	3.737	3.923	3.970	+1.2
Sand, per ton†	2.174	2.242	2.342	2.402	2.487	2.501	+0.6
Crushed stone, 1½", per ton†	2.621	2.660	2.685	2.788	2.796	2.838	+1.5
Lumber, 2x4 Fir, per M fbm†	103.513	115.514	120.805	120.250	116.611	114.350	−1.9
Lumber, 2x4 Pine, per M fbm†	92.567	93.217	100.066	105.466	101.633	101.480	−0.2
Plywood, exterior ⅜", Seattle base price	199.000	190.000	190.000	163.000	156.000	170.000	+9.0
Plywood, interior ⅜", Seattle base price	179.000	171.000	170.000	147.000	152.000	166.000	+9.2
Gypsum sheathing, ½"x2'x8', per Msf*	.....	.....	59.041	62.016	63.030	62.876	−0.3
Ready-mixed concrete, per cu yd†	11.913	12.124	12.538	13.343	13.676	13.796	+0.9
Fiber board sheathing ½" sq. ed, per Msf*	.....	.....	68.321	69.314	71.300	71.370	+0.1
Mineral wool insulation 3' batts, per Msf*	.....	.....	73.289	71.711	70.553	70.513	−0.1
Concrete blocks, sand/gravel, 8"x8"x16", each*	.206	.205	.203	.224	.227	.228	+0.4
Brick, common, per M†	32.729	32.237	34.530	36.888	37.500	37.480	−0.1
Lime, hydrated finishing, per ton, CL†	28.801	30.928	32.147	33.598	36.299	38.713	+6.9
Structural clay tile, 3x12x12", per M, 2,000 up*	159.418	162.115	162.453	174.947	180.844	185.403	+2.5
Vitrified clay sewer pipe, std 12", per ft†	1.065	1.106	1.150	1.240	1.315	1.275	−3.1
Concrete sewer pipe 12", per ft†	.983	.998	1.021	1.097	1.200	1.290	+7.5

* Delivered, trucklots † Fob City, CL

BLS Building Materials Price Indexes—1947-49 = 100

	July 15								
	1947	1948	1949	1950	1954	1955	1956	1957	1958
All Building Materials	93.4	104.5	100.3	109.1	120.5	125.7	130.6	131.4	129.7
Lumber & Wood Products									
Douglas Fir	96.9	112.6	93.9	126.0	125.2	132.3	131.7	117.8	112.2
Southern Pine	91.9	106.1	91.8	107.4	111.2	113.6	119.5	111.9	114.5
Other Softwoods	89.2	108.8	105.2	120.2	130.0	138.2	138.8	133.4	128.3
Hardwoods	95.4	109.0	93.7	115.2	111.9	118.9	127.2	119.0	119.0
Millwork	87.6	108.1	107.2	113.0	130.7	128.3	129.7	128.5	127.3
Plywood, Softwood	88.3	118.5	87.0	115.9	108.9	110.7	103.4	92.6	94.0
Plywood, Hardwood	96.1	105.8	92.9	96.7	98.8	102.6	105.2	103.4	107.5
Nonmetallic Minerals									
Portland Cement	91.0	104.4	105.3	107.0	128.2	131.8	139.8	147.2	150.7
Concrete Ingredients*	92.8	103.0	105.0	106.0	122.1	125.0	130.6	136.4	139.0
Concrete Products	96.4	100.5	102.7	104.5	117.7	118.3	123.0	126.4	128.5
Plate Glass	96.3	104.4	104.4	112.7	132.0	137.5	145.7	145.7	145.7
Window Glass	95.6	99.2	103.9	109.0	131.3	138.8	143.5	145.9	145.8
Gypsum Products	92.6	104.1	102.3	102.3	122.1	122.1	127.1	127.1	133.1
Prep. Asph. Roofing	94.5	106.4	102.6	98.9	98.5	110.8	117.9	125.8	105.8
Struct. Clay Products	93.4	102.7	105.4	111.4	132.0	141.3	149.3	155.1	155.6
Insulation Materials	97.5	103.5	99.9	99.8	110.1	106.7	100.9	103.1	104.0
Paint & Paint Materials									
Prepared Paints	98.7	100.6	98.3	98.1	112.8	114.8	119.1	128.1	128.2
Paint Materials	93.5	101.3	94.1	87.8	97.6	97.1	98.6	99.9	103.4
Building Paper & Board	92.0	105.5	103.8	108.6	127.9	129.7	138.1	141.7	143.8
Metals & Metal Products									
Structural Shapes	82.2	100.3	112.4	120.4	146.2	157.5	157.5	192.3	192.3
Bars, Concrete Reinf	84.7	96.1	111.9	115.2	156.4	164.3	164.3	189.6	187.3
Pipe, Black Steel	83.1	100.6	110.1	115.1	144.0	157.1	163.2	190.3	190.3
Pipe, Galvanized	82.8	100.5	106.2	114.4	130.1	141.9	150.1	165.2	165.2
Cast Iron Soil Pipe	80.8	107.0	101.7	101.7	105.5	111.3	106.0	115.1	113.5
Copper Water Tubing	97.5	108.9	93.9	120.4	136.5	151.2	170.1	147.9	138.9
Sheets, Galvanized	88.8	98.3	101.1	119.9	133.0	143.2	144.7	153.1	154.0
Sheets, Aluminum	94.7	102.2	105.9	107.7	132.6	140.0	151.6	158.6	159.4
Metal Doors, Sash, Trim	95.6	97.4	102.8	107.3	127.3	144.2	139.9	142.8	142.1
Nails, Bd	79.4	103.2	112.0	114.9	144.5	159.4	159.4	182.2	182.2
Building Wire	104.6	114.0	78.2	87.9	89.3	118.6	156.3	138.0	97.0
Nonmetal Sheathed Cable	109.1	112.2	75.0	81.4	78.4	81.7	112.9	85.0	71.0
Hardware, Finished	96.7	97.4	101.9	110.1	138.2	144.9	155.2	164.5	171.7
Plumbing Equipment	94.2	101.5	102.2	103.3	118.5	123.2	134.1	129.1	120.9
Heating Equipment	94.5	99.1	102.7	102.9	114.0	113.6	117.9	122.8	121.4
Basement Oil Tank	99.8	106.5	85.7	83.5	102.2	105.7	124.4	134.8	134.8
Machinery									
Elevators & Escalators	94.9	98.8	105.2	104.8	117.8	120.8	129.2	138.9	138.7
Fans and Blowers	88.7	98.9	113.7	119.5	143.7	143.6	171.3	176.0	180.2
Incandescent Lamps	.....	.....	.....	.....	.....	147.2	147.0	160.5	159.6

* Includes Portland cement

Building Materials Prices

ENR average yearly prices at New York, except steel & cast iron pipe

Year	Brick common per M	Cement per bbl	Lime per bbl	Lumber per M ft bm	Steel shapes per cwt	Pipe cast iron per ton
					$	$
1874	$7.41	$1.48*R*	$1.50*a*	$26.00*d*	.....	.....
1898	6.65	2.25*R*	95*a*	21.75*d*	.....	.....
1907	6.16	1.55*C*	95*a*	30.50*d*	$1.75	$30.75
1913	6.75	1.18*C*	915*a*	25.04*e*	1.50	21.00
1929	11.71	2.23*C*	2.25*b*	64.50*f*	1.92	38.00
1932	9.75	1.62*C*	2.25*b*	39.91*f*	1.56	30.50
1938	13.10	2.12*C*	2.80*b*	59.33*f*	2.18	44.00
1939	13.46	2.20*C*	2.80*b*	64.35*f*	2.10	42.75
1942	14.17	2.20*C*	2.80*b*	85.61*f*	2.10	45.00
1947	26.38	3.46*C*	24.34*c*	115.83*g*	2.61	70.96
1948	30.33	4.05*C*	26.32*c*	114.38*g*	2.98	86.83
1949	33.00	3.32*p*	26.80*c*	98.13*g*	3.25	86.17
1950	33.50	3.52*p*	27.10*c*	131.88*g*	3.42	84.84
1951	37.92	3.78*p*	31.00*c*	154.79*g*	3.65	96.00
1952	36.45	3.84*p*	32.00*c*	155.00*g*	3.73	97.63
1953	35.33	3.97*p*	32.00*c*	156.67*g*	3.98	102.60
1954	38.92	4.01*p*	32.00*c*	157.21*g*	4.16	104.30
1955	41.00	4.24*p*	33.67*c*	166.29*g*	4.40	106.38
1956	44.00	4.44*p*	36.75*c*	171.00*g*	4.73	115.12
1957	44.00	4.36*p*	37.25*c*	165.17*h*	5.14	121.3

BRICK: wholesale, fob; CEMENT: net, delivered *R Rosendale, rest Portland *C in cloth bags delivered (1949-$4.23) price of bags included *p in paper bags, fob city in carload lots. LIME: *a common lump, wholesale, fob, 180 lb., net *b 280 lb. *c common hydrated, delivered, per ton (40 bags of 50 lb. ea) no longer quoted per bbl. LUMBER: No. 1 common, rough *d 1-in. yellow pine, wholesale at dock *e 3-in. LLYP *f 3x12LLYP from Lumber Trade Jl. *g 3x12 SLYP (LLYP out of market) *h 3x12 Douglas fir, rough, trucklots, del. STEEL: *i fob Pittsburgh. CAST IRON PIPE: *j Pit cast, 6" & larger, CI B or heavier B&S, fob Birmingham, Ala. Starting in 1950, figures also represent price index for average price per foot of 6-in. to 24-in. sizes Class 150 Federal Specification WW-P-421 Bell & Plain End Centrifugal Cast Pipe in 18-ft. lengths; beginning 1955, same sizes but for Class 150 Standard Conditions Pipe, Federal Specification WW-P-421a and ASA Specifications A21.6 (AWWA C-106)

Wholesale Price Index, Building Materials

Bureau of Labor Statistics, 1947-49 = 100*

Month	1947‡	1948‡	1949‡	1950‡	1955	1956	1957	1958
Year	94.0	104.0	102.0	109.5	125.5	130.6	130.6	.....
Jan	88.7	100.7	105.4	102.1	122.1	129.4	130.5	130.3
Feb	89.9	101.2	104.9	103.2	122.5	129.6	130.5	130.1
Mar	91.5	101.8	104.4	104.1	122.8	130.5	130.5	129.6
Apr	92.8	102.0	103.4	104.7	123.4	131.2	130.7	129.0
May	93.0	102.5	102.4	106.3	124.1	130.8	130.7	129.2
June	92.8	103.1	101.5	107.5	124.1	130.6	130.7	129.5
July	93.4	104.5	100.3	109.1	125.7	130.6	131.4	129.6
Aug	94.9	106.7	99.7	112.0	127.4	131.5	131.3	130.6
Sept	96.2	107.0	99.9	114.4	128.5	131.0	130.9	.....
Oct	97.1	106.6	100.2	115.8	128.7	131.0	130.2	.....
Nov	98.3	106.3	100.6	116.3	128.1	130.8	130.1	.....
Dec	99.2	105.9	101.2	118.3	128.3	130.5	130.1	.....

*Official beginning January, 1952 ‡ Unofficial—for Official Index for these years see the 1926=100 wholesale price index discontinued by BLS 1952

Stability Ends as Prices Firm Up

28 month low, it rose to 130.6 on August 15 (based on 1947-49 = 100). This is 1.2% above the April low and the highest since September '57. However, the index is 0.6% below the July '57 record high. The 1-point rise in August due to structural steel and lumber, is the biggest monthly increase in about three years.

Over the years, in spite of their differences, the ENR and BLS Materials Price Indexes have moved together reasonably closely. However, more recently the ENR index is moving up faster than the BLS index. One big reason is that ENR index weights steel heavily, while the BLS index, aimed at measuring housing costs, weights lumber heavily.

• **Other major items up**—As of August, nearly all major construction materials are priced higher than a year ago, according to ENR's 20-Cities Averages.

Greatest increase is in plywood prices, up 9% (though they are still well below their peak—see page 36). Concrete sewer pipe is up 7.5%.

Exceptions to the general price uptrend in the last 12 months are lumber, gypsum sheathing, mineral wool insulation, brick and vitrified clay sewer pipe (see table at left on opposite page).

Materials Prices in 22 Cities

Market quotations as reported to Engineering News-Record

ENR 22-Cities	CEMENT, Bulk per bbl CL lots, fob city Incl. Dealer Disc		SAND, per ton Truck lots or over fob city		CONCRETE READY MIXED 1:2:4 over 50 cy per cy delivered		STRUCTURAL STEEL SHAPES per cwt, base price		REINFORCING STEEL BARS New billet per cwt, base price		LUMBER 2x4, per Mfbm‡ Short Leaf			
											Yellow Pine		Douglas Fir	
	Dec. '57	Aug. '58	Dec. '57	Aug. '58	Dec. '57	Aug. '58	Dec. '57	Aug. '58	Dec. '57	Aug. '58	Dec. '57	Aug. '58	Dec. '57	Aug. '58
Average	$3.92	$3.97	$2.49	$2.50	$13.72	$13.80	$9.26	$9.19	$8.26	$8.32	$99.90	$101.48	$113.76	$114.35
Atlanta	3.90a	3.90a	2.50a	2.50a	13.75f	14.50f	8.74	9.05	9.25	9.25	76.00a	76.00a		
Baltimore	4.05a	3.80a	2.25ab	2.25ab	12.95	13.10	9.45	9.45	8.45d	8.45d	96.00b	100.00b	123.00bi	123.00bi
Birmingham	3.15ei	3.30ei	2.13h	2.13h	12.55	12.55	8.64h	8.64h	8.60i	8.60i	82.00a	82.00a	105.00a	105.00a
Boston	4.67a	4.59a	3.00bg	3.00bg	15.00g	15.00g	9.63b	9.63b	8.25	8.25	96.00kn	106.00kn	106.00k	117.00k
Chicago	3.72a	3.87a	4.13ac	4.13ac	14.00	14.00	8.79k	8.79k	6.91cg	6.91cg	91.00c	98.00c	114.00c	122.00c
Cincinnati	4.05c	4.18c	2.34ad	2.34ad	13.25	13.25	9.18bf	9.18bf	9.08fh	9.08fh	84.50b	86.50b	102.75b	95.50b
Cleveland	3.74ei	3.74ei	1.65	1.75	16.55	14.65	9.01	9.01	6.89a	6.89a	97.00c	90.00c	110.00c	100.00c
Dallas	3.15a	3.25a	1.90	1.90	11.25	12.00	10.25	9.25	8.85	7.75	65.00aj	70.00aj		
Denver	4.19a	4.29a	1.20ac	1.20ac	10.70	10.70	9.90	9.84	8.95a	8.95a			122.50b	122.50b
Detroit	3.60a	3.75a	4.25	4.25	14.20	14.40	9.18	9.18	7.15c	7.15c	115.00f	115.75f	127.00f	127.75f
Kansas City	3.96a	3.96a	1.70ab	1.70ab	13.50	13.50	9.31a	9.31a	8.10	8.10	120.00b	120.00b	120.00b	120.00b
Los Angeles	4.68cf	4.68cf	2.41ab	2.41ab	12.96jg	12.96jg	9.35cd	8.60cd	7.35	7.35			95.00d	92.00d
Minneapolis	4.04a	4.04a	1.60abe	1.60abe	14.30e	14.30e	9.08c	9.08c	9.26m	9.26m			140.00e	140.00e
New Orleans	3.45a	3.65a	2.00	2.09	13.65	14.00			8.00cej	8.00cej	94.00a	89.00a	104.50a	99.50a
New York	4.42a	4.26a	2.30cf	2.30cf	17.40ak	17.40ak	9.45ag	9.45ag	8.35i	8.35i	114.00g	120.00g	116.00g	125.00g
Philadelphia	4.16ag	4.16ag	2.50ab	2.35ab	14.15cl	14.15cl	8.90	9.125	7.90	8.14	119.00f	119.00f	135.00f	135.00f
Pittsburgh	4.47bhi	4.62bhi	3.00bi	3.00bi	15.55	15.90	8.64h	8.64h	7.10i	7.10i	125.00g	125.00g	140.00g	145.00g
St. Louis	3.77c	3.92c	2.75bg	2.75bg	12.65	12.90	9.10g	9.10g	8.45a	8.45a	124.00f	125.00f	137.00f	137.00f
San Francisco	3.54c	3.69c	2.12	2.12	12.75b	13.00b	9.50	9.50	9.45d	9.45d			80.00m	83.00m
Seattle	3.75a	3.70a	4.00acg	4.25acg	13.30h	13.90h	9.80aj	9.80aj	8.85b	8.85b			70.00a	69.00a
Montreal	2.96di	3.11di	2.25ab	2.40ab	10.80di	10.80di	8.85ei	8.40ei	8.85kln	7.25kln	92.00kl	87.00kl	178.00l	165.00l
Toronto	4.03	3.84	2.05a	2.05a	15.25	15.25	8.85	9.00l	7.85	7.85	90.50k	90.75k	121.00	115.00

*CEMENT: *a less 10¢ disc., 15 days *b less 2% disc., 15 days *c less 10¢ disc., 10 days *d delivered, 10¢ disc., 20 days *e destination price *f LCL *g delivered *h fob yard *i truckload lots *SAND: *a delivered *b truckload lots *c per cu yd *d 5 tons or more *e less 5% for cash *f barge lots asd. *g less 2% for cash *h fob cars *i fob yard *READY-MIXED CONCRETE: *a 5 cu yds or over, del. Man. *b 10-100 cy brackets *c 1-3 mi zone *d 2,000 lb comp. *e 2,500 lb comp. *f less 25¢ disc., 15 days *g less 50¢ for cash *h 2% disc. for cash *i federal tax included. Add 5% mun. & prov. *j 1:2½:3½ *k plus escalator clause *l add 15¢ for ea 1-mi zone *STRUCTURAL STEEL SHAPES: *a delivered *b 2000-9999# *c 10,000-29,000# *d incl. delivery in free zone *e add dominion, provincial, and municipal sales taxes *f fob city *g 2000-4999# *h add 15¢ del. *i average of Canadian & American made *j ½% for cash *k 30,000# or over *l $8.85 without tariff charges *REINFORCING STEEL BARS: *a 20 tons or over *b intermediate struct'l *c CL *d intermediate or hard grade *e fob city *f 2% off for cash *g add 7.5¢ switch *h incl. 15¢ del. *i add 15¢ del. *j add 10¢ del. *k federal tax exempt *l add 10¢ switch *m 10,000-15,999#, fob city *n average of Canadian & American made *LUMBER: ‡ fir prices quoted on lengths up to 20 ft; pine, to 16 ft no. 2 common or better, except as noted *a fob mill *b fob city out of yard *c fob city, direct mill shipment *d LCL retail at yard *e LCL retail delivered *f CL delivered *g truckload lots delivered *h alongside dock *i no. 1 common *j no. 3 common *k spruce *l tax exempt *m incl rail freight from NW mills, $11.50-15.00; from No. Calif. mills add $9.00 rail, $9.50 truck. All rates for surf. stock *n hemlock

ENR 22-Cities	BRICK, CLAY BACKING per M quantity delivered		STRUCTURAL CLAY TILE Partition, Scored 3x12x12, per M 2000 pieces or over delivered		GYPSUM SHEATHING ½"x2'x8' per Msf delivered, truck lots		MINERAL WOOL INSULATION 3" batts, delivered truck load lots		CAST IRON PIPE Price Index*		CONCRETE SEWER PIPE 12 in. per ft., delivered		VITRIFIED CLAY SEWER PIPE std. 12 in. per ft. delivered	
	Dec. '57	Aug. '58	Dec. '57	Aug. '58	Dec. '57	Aug. '58	Dec. '57	Aug. '58	Dec. '57	Aug. '58	Dec. '57	Aug. '58	Dec. '57	Aug. '58
Average	$37.51	$37.48	$182.11	$183.71	$62.73	$62.88	$71.01	$70.51	140.5	140.5	$1.20	$1.29	$1.292	$1.318
Atlanta	30.50g	30.50g	149.90f	149.90f	70.00	70.00	60.00	60.00	130.5	130.5	.88f	1.55f	.98	.98
Baltimore	36.00e	36.00e	203.00	217.00	55.00a	55.35a	66.50	66.50	140.4	140.4	1.01	1.01	1.28	1.28
Birmingham	27.00j	27.00j	135.00f	135.00f	75.00	75.00	70.00	70.00	125.8	125.8	1.25f	1.25f	.86	.86
Boston	41.50g	41.50g	232.00b	232.00b	60.00b	60.00b	75.00	75.00	143.5	143.5	1.56af	1.56af	1.472ghj	1.512ghj
Chicago	30.00	30.00	135.00	135.00	62.00	62.00	80.00	80.00	140.9	140.9	1.30	1.30	1.78d	1.78d
Cincinnati	45.75d	48.75d	205.00e	205.00e	51.16c	51.16c	63.00	63.00	135.5	135.5	.85f	.85f	1.283j	1.283j
Cleveland	41.00	38.00	209.00	209.00	65.00	65.00	86.00	75.00	141.7	141.7	.85f	.85f	1.094i	1.175i
Dallas	27.00	26.75	152.00	152.00	65.00	60.00	66.70	62.25	137.8	137.8	1.04	1.17	.799	.995
Denver	31.50	21.50			62.00	62.00	71.00c	71.00c	148.2	148.2	.75f	.75f	.84e	.87e
Detroit	47.50g	47.50g	273.00	273.00	61.00	68.00			142.1	142.1	1.10	1.10	1.70e	1.70e
Kansas City	33.00	33.00	158.00	158.00			75.00	75.00	138.5	138.5	.95	.95	1.105	1.105
Los Angeles	32.50a	32.50a			66.50	64.50	83.00	83.00	148.6	148.6	1.12	1.12	1.61ac	1.61ac
Minneapolis	43.00ig	45.60ig	188.00f	192.00f	80.00	80.00	80.00	80.00	149.9	149.9	2.13b	2.13b	1.55df	1.55df
New Orleans	40.00	42.00	186.00	186.00	60.00	60.00	65.00a	65.00a	133.3	133.3	.85	.85	.983	.983
New York	44.00	44.00	175.30d	176.90d	54.00	54.25	68.50	68.50	138.7	138.7	1.50	1.50	1.94	1.94
Philadelphia	32.00	32.00	169.00	169.00	49.54	51.50	65.00	65.00	138.0	138.0	1.75b	1.75b	1.31	1.31
Pittsburgh	39.00h	39.00h	147.50g	147.50g			55.00b	55.00b	142.9	142.9	1.45g	1.66g	1.15d	1.15d
St. Louis	43.00f	43.00f	178.50f	178.50f	70.00	70.00	85.00	85.00	136.9	136.9	1.45ce	1.45ce	1.08	1.08
San Francisco	43.00b	43.00b	156.85a	156.85a	58.00	58.00	66.50	66.50	148.6	148.6	1.05f	1.05f	1.69b	1.69b
Seattle	43.00	48.00	225.00f	235.00f	65.00	65.00	74.00	74.00	149.0	149.0	1.10dh	1.95dh	1.33a	1.50a
Montreal	42.00c	48.25c	170.00ch	170.00ch	53.00	53.00	66.00	66.00	.....	.....	1.17b	1.17b	1.90k	2.00k
Toronto	35.00	35.00	146.00	158.00	64.50	64.50	60.00	62.50	.....	.....	1.02	.92	1.425	1.50

*BRICK: *a fob yard *b fob plant, Stockton *c $4.50 del. *d truck load or over *e $1.00 disc. *f red face *g truck lots *h 2% cash *i sand lime *j 80% common *STRUCTURAL CLAY TILE: *a fob plant, Stockton *b fob yard, Roxbury *c smooth *d fob trucks, job site, NYC *e truck load and over *f truck lots *g 2% cash *h incl. federal tax *GYPSUM SHEATHING: *a full trailer loads *b 10 ton quantities *c fob city *MINERAL WOOL INSULATION: *a fob warehouse *b 35# bag *c flame proof $75.00 *CAST IRON PIPE: *Price indexes for centrifugal cast iron pipe (includes carload freight allowed to city). These also serve as the historical record of the $ per net ton price of class B, B&S, pit cast iron pipe *CONCRETE SEWER PIPE: *a culvert pipe, reinf. ASTM C75-56 *b reinf, ASTM C75-54 *c reinf, ASTM C76-55 *d 2% cash *e fob plant *f truck del. *g fob city *h reinforced *CLAY SEWER PIPE: *a extra strength *b SS 361-A *c fob plant *d truck del. *e LCL del., fob truck *f listed price based on LCL (no min.) *g ASTM C13-40 *h CL fob origin, freight allowed *i 1 ft lengths *j 3 ft lengths *k CESA A60-1941

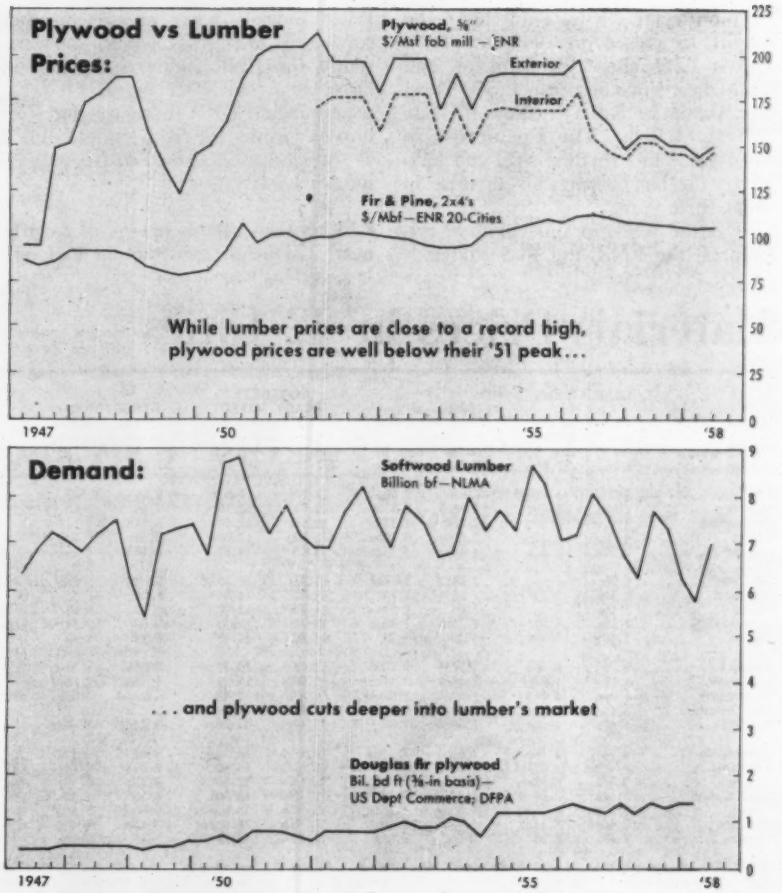
Plywood Is Widening Its Price Advantage

On top of some labor saving advantages plywood has steadily improved its price position since its prices peaked out in December 1951.

Using this date as a base, Douglas fir exterior plywood prices, FOB mill, dropped back by 32% as of March 1958 and the mill price of interior plywood fell 19%. By contrast, lumber prices rose 4% during this period, as measured by the ENR 20-cities average of Douglas fir and southern pine 2 x 4's.

While plywood prices were falling between 1951 and 1958, demand rose. Douglas fir plywood shipments in the first quarter of 1958 were 133% greater than in the last quarter of 1951. But softwood lumber shipments declined 16%.

From December 1951 to their peak in mid-'56, lumber prices rose 12% to an average of $111 per Mfbm for fir and pine 2 x 4's. Over this period, plywood prices dropped 19% for exterior and 10% for interior. And 1956 lumber price peak lumber shipments were 17% above the 1951 base, but plywood shipments had climbed 216%.



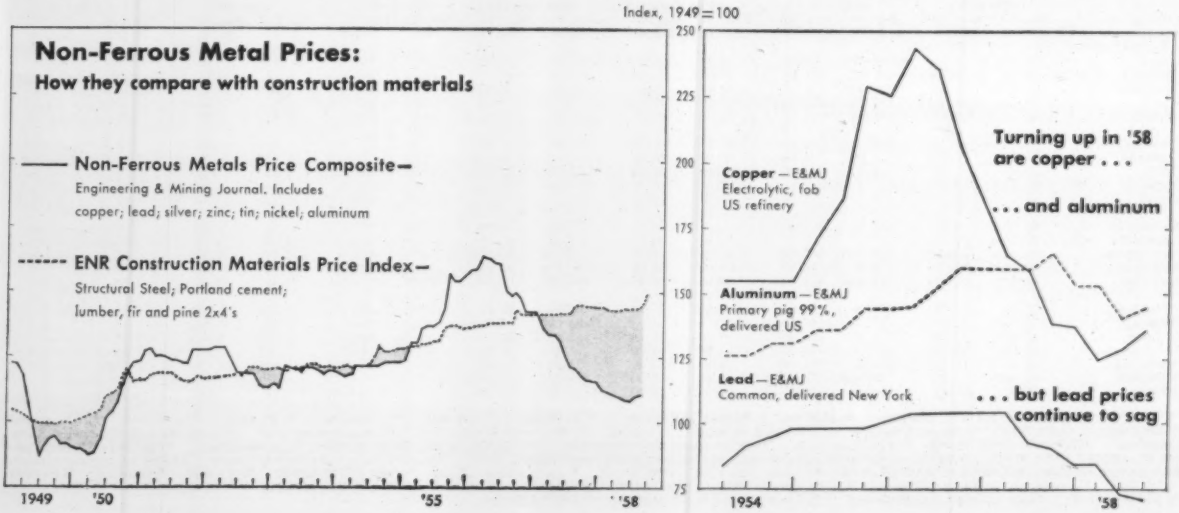
Non-Ferrous Metals Show August Rebound

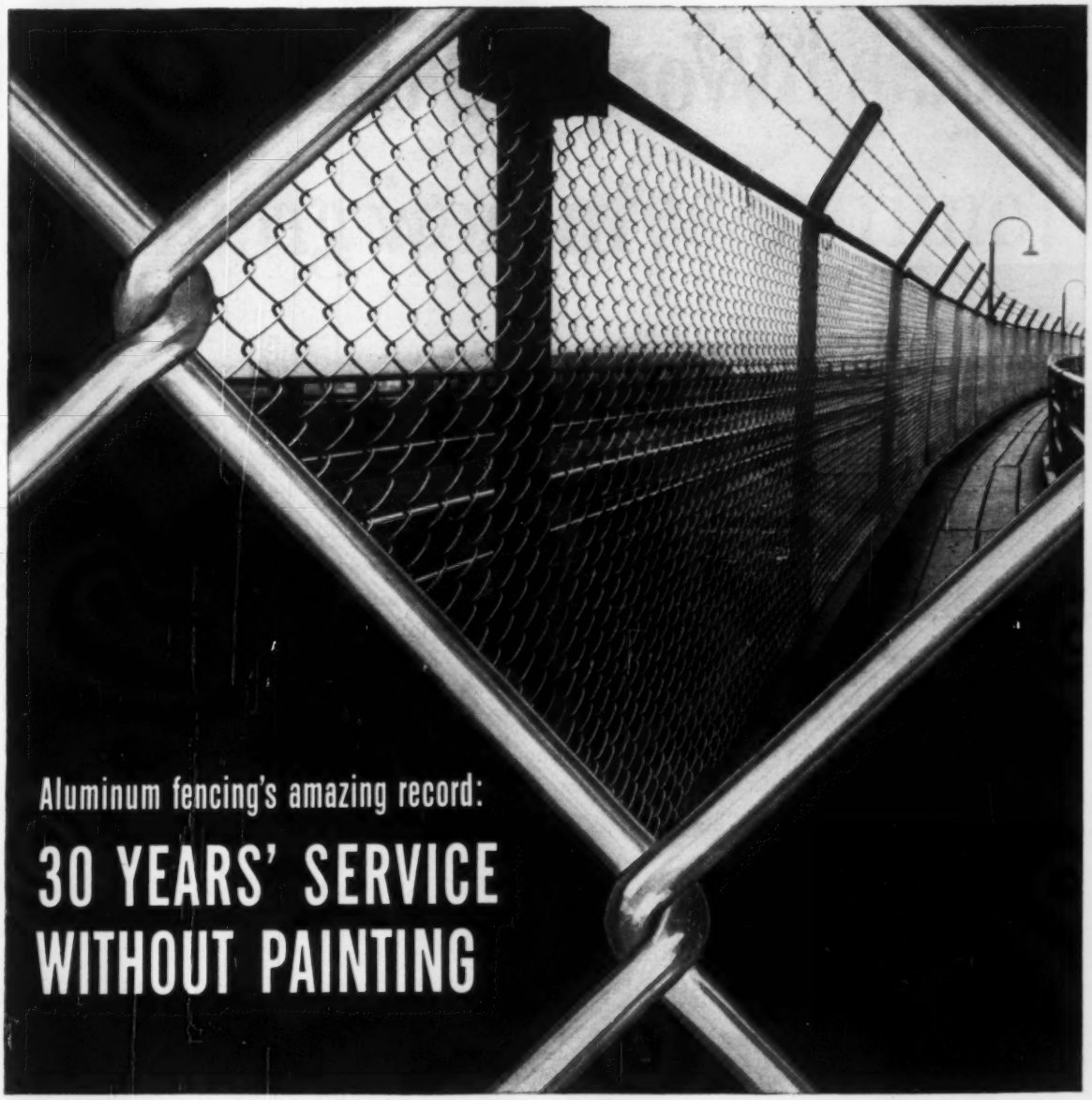
The fast slide of non-ferrous metals prices ended in May and prices headed upward, according to Engineering & Mining Journals Non-Ferrous Metals Price Index. The August index of 110.8 is 2.5 points above May's eight-year low. But August is well under the March, 1956 peak of 163.2 (1949 = 100).

Copper prices show the most dramatic swing. From a first quarter '56 high of 46.728 cents per pound, copper plunged to a low of 24.018 cents in the second quarter of '58. But by August, prices rose to 26.088 cents.

Aluminum prices turned down in the last quarter of '57. From a high of 28.1 cents per pound for primary pig, aluminum prices skidded to a low of 24 cents in April. Only in August did prices turn up slightly.

Lead is the sick item of the non-ferrous group. The price of lead has dropped to the lowest point in several years, from a May '57 high of 16 cents per pound.





Chain Link Fencing of Alcoa Aluminum Now Available Throughout U.S. to Help You Cut Maintenance

Chain link fencing of Alcoa® Aluminum, for highways, divider strips and rights-of-way, is a bigger bargain than ever: the premium you pay for aluminum now amounts to *less* than the cost of one routine painting of ordinary metal fencing.

From this point on, you're money ahead with aluminum. This was proved recently by examination of an aluminum fence installation in Pittsburgh. Installed 30 years ago in a continuously corrosive atmosphere, it is still standing today and will probably live to be 100! The aluminum still has its original structural soundness and good looks . . . has never cost a penny in maintenance.

Long-life, trouble-free installations like this are typical, but check the many other exclusive advantages you get with fencing of Alcoa Aluminum:

- **High Strength**—Average tensile strength of Alcoa's new alloy is 57,500 lbs/sq in.
- **Easy Erection**—Light weight means it goes up faster with less labor.
- **Enduring Beauty**—Aluminum ages to a pleasing, soft gray; never corrodes or peels.
- **Readily Available**—Reliable manufacturers and erectors in all 48 states can supply Alcoa Aluminum fencing and accessories. For the name of the supplier in your area, contact your nearest Alcoa sales office.

Send for Complete Specifications!

Alcoa's A.I.A. File 14-K contains complete specifications and technical data. For your copy, write Aluminum Company of America, 1974-J Alcoa Building, Pittsburgh 19, Pa.

ALCOA ALUMINUM
ALUMINUM COMPANY OF AMERICA

Your Guide to the Best in Aluminum Value

"ALCOA THEATRE"
Exciting Adventure
Alternate Monday Evenings

"Working through old in new ground..."

Says Mr. C. J. Fanning, Pres.
Fanning & Doorley Construction Co.
Providence, R. I.

"You soon see why Transite Pressure Pipe saves time and labor when you're working through old, unmarked utility and service lines," continues Mr. Fanning, one of New England's largest contractors. "These unforeseen obstacles can cause costly slowdowns, but they present fewer problems with Transite. Its flexibility, easy handling and speed of assembly enable our men to work fast even under the most difficult working conditions. And by the same token—your crews really move along when conditions are favorable."

Here's why contractors everywhere prefer Transite Pressure Pipe

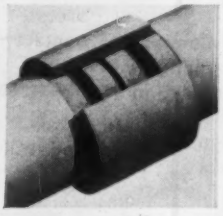
An important reason is the time it saves . . . the way it helps in tough installations. And just as important, the way it lets your crews stay right behind the excavator when conditions are favorable.

If you've worked with Transite®, you know that no pipe goes in faster, easier, *surer*. You know, too, the reasons for its ease and simplicity of installation and assembly.

Transite's long (13′), lightweight lengths are easily, quickly handled both in the trench and above ground. Its Ring-Tite® Coupling makes installation still faster. Requires no time-consuming joining methods . . . automatically positions pipe ends to allow for expansion, maintains and holds them positively during assembly.

The result is contractor peace of mind—a tight seal at every coupling in the line!

You'll want a copy of *TR-62A*, convenient, pocket-size Installation Guide and *TR-160A*, informative folder on Transite Pressure Pipe. Write for your copies today. Address Johns-Manville, Box 14 EN, New York 16, New York.



Sectional view of the Ring-Tite Coupling shows how rings are compressed and locked in grooves to provide a tight, lasting seal.

Photo by Tony Petri Studio
Providence, R.I.

"Good Water, the Lifeblood of your Community" Let's promote it—Let's have it!

JOHNS-MANVILLE

JOHNS-MANVILLE PRODUCTS

unmarked service lines...or Transite Pipe saves us time!"

Easily handled . . . quickly assembled with the Ring-Tite Coupling . . . Transite speeds and simplifies most any installation!

Crews of Fanning & Doorley Construction Co. installing 8" Transite line in Providence, R.I., water supply system.

Materials Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Clay Products, Lime, Plaster, Paint, Roofing: Last, Aug. 28; Next, Sep. 25.
- Wage Rates, Building Board, Lath, Insulation: Last, Aug. 28; Next, Oct. 2.
- Cement, Aggregates, Ready-mixed Concrete, Asphalt: Last, Sep. 4; Next, Oct. 9.
- Iron & Steel Products, Pipe: Last, Sep. 11; Next, Oct. 16.

LUMBER, TIMBER, PLYWOOD—PER M FT., B. M., CARLOAD LOTS F. O. B.

SOUTHERN PINE AND DOUGLAS FIR

All Southern Pine is No. 2 common or better and for No. 1 N. C. Box. (Prices in Bold Face)

All Fir boards, dimensions, planks No. 2, Fir small timbers and timbers are No. 1. Lengths up to 20 ft. (Prices in italics)

	1x6 s4s	1x8 s4s	2x4 s4s	2x6 s4s	2x8 s4s	2x10 s4s	3x12 Rgh	6x12 Rgh	12x12 Rgh	LONG LEAF Y. P. Merchantable grade up to 20 ft. 2x12 Rgh	12x12 Rgh	PLYWOOD Rail freight increment (See note for base price) ¾"	¼"
Atlanta †	$73.00	$76.00	$76.00	$79.00	$81.00	$86.00	$136.00	.....	.....	$121.00	$156.00	$22.32	$27.24
Baltimore *	95.00	100.00	100.00	100.00	100.00	105.00	114.00	.....	.....	170.00	185.00	25.92	31.60
	103.00g	*108.00g*	*128.00g*	*128.00g*	*128.00g*	*128.00g*	*138.00g*	*$155.00*	*$149.00*	.....	.....	.....	.....
Birmingham †	80.00	82.00	75.00	82.00	85.00	90.00	105.00	.....	.....	115.00	160.00	21.78	26.58
	70.50	*70.50*	*67.00*	*70.00*	*70.00*	*85.00*	*73.50*	*70.50*	*70.50*	.....	.....	.....	.....
Boston ‡	98.00f	98.00f	107.00f	109.00f	109.00f	116.00a	.....	.....	.....	.....	.....	25.92	31.60
	101.00k	*101.00k*	*120.00*	*120.00*	*120.00*	*119.00*	*132.00*	*132.00*	*148.00*	.....	.....	.....	.....
Chicago **	111.00	114.00	108.00	122.00	130.00	131.00	126.00	.....	.....	154.00	154.00	22.45	27.37
	119.00	*119.00*	*132.00*	*130.00*	*130.00*	*131.00*	*139.00*	*139.00*	*139.00*	.....	.....	.....	.....
Cincinnati *	93.00	94.25	86.50	90.50	95.00	102.75	116.00	.....	.....	129.50	127.50	25.00	30.48
	96.50	*98.00*	*102.50*	*104.50*	*100.50*	*116.75*	*129.75*	*129.75*	*129.75*	.....	.....	.....	.....
Cleveland **	92.00	93.00	95.00	97.00	100.00	105.00	.....	.....	.....	.....	.....	25.37	30.93
	.....	.....	*109.00*	*110.00*	*112.00*	*112.00*	*127.00*	*127.00*	*127.00*	.....	.....	.....	.....
Dallas *‡	74.50	74.50	70.00	70.00	73.00	75.50	120.00	.....	.....	130.00	125.00	18.72	22.80
Denver *	*Not in stock*		*122.50*	*122.50*	*122.50*	*127.50*	*136.00*	*148.50*	*153.80*	.....	.....	13.92	16.98
Detroit ‡	127.50	130.00	126.75	128.00	133.00	133.00	.....	.....	.....	141.00	.....	25.00	30.48
	136.00	*136.00*	*138.75*	*143.50*	*141.00*	*146.00*	*196.00*	*206.00*	*206.00*	.....	.....	.....	.....
Kansas City a	120.00	120.00	120.00	120.00	125.00	135.00	.....	.....	.....	.....	.....	16.56	20.16
	120.00	*120.00*	*120.00*	*120.00*	*125.00*	*125.00*	*150.00*	*225.00*	*225.00*	.....	.....	.....	.....
Los Angeles 1	*98.00*	*98.00*	*98.00*	*98.00*	*98.00*	*98.00*	*126.00*	*151.00*	*151.00*	.....	.....	16.61ab	20.25ab
Minneapolis #*	*135.00m*	*135.00m*	*140.00*	*140.00*	*140.00*	*140.00*	*185.00*	*185.00*	*185.00*	.....	.....	19.89	24.25
Montreal *b	87.00	94.00	87.00	88.00	104.00	125.00	.....	.....	.....	122.00	122.00	.....	.....
	165.00	*165.00*	*165.00*	*165.00*	*165.00*	*165.00*	*170.00*	*170.00*	*170.00*	.....	.....	.....	.....
New Orleans †	87.00	87.00	90.00	91.00	90.00	97.00	121.50	.....	.....	151.00	151.00	18.72	22.80
†	*105.00*	*105.00*	*94.50*	*115.00*	*115.00*	*115.00*	*127.50*	*127.50*	*147.50*	.....	.....	.....	.....
New York *‡	108.00	109.00	120.00	122.00	122.00	126.00	.....	.....	.....	250.00	280.00	25.92	31.60
	.....	.....	*125.00*	*126.00*	*126.00*	*127.00*	*170.00*	*170.00*	*170.00*	.....	.....	.....	.....
Philadelphia ‡		Range from 100/120				105/125	105/125	.....	.....	214/224	214/224	28.00	32.00
		Range from 110/140				*115/145*	*125/150*	*164.00*	*164.00*	.....	.....	.....	.....
Pittsburgh 2	115.00	120.00	120.00	120.00	125.00	130.00	150.00	.....	.....	150.00	185.00	25.92	31.60
	135.00	*115.00*	*140.00*	*150.00*	*150.00*	*150.00*	*220.00*	*185.00*	*185.00*	.....	.....	.....	.....
St. Louis #	121.00	123.00	131.00d	131.00d	131.00e	136.00e	.....	.....	.....	.....	.....	18.72	22.80
	.....	.....	*141.00*	*141.00e*	*141.00e*	*145.00e*	*197.00e*	*197.00e*	*197.00*	.....	.....	.....	.....
San Francisco 1	*95.00*	*95.00*	*96.00*	*96.00*	*96.00*	*96.00*	*108.00*	*127.00*	*127.00*	.....	.....	12.22	14.91
Seattle †	*67.00*	*73.00*	*75.00*	*75.00*	*75.00*	*75.00*	*85.00*	*95.00*	*95.00*	.....	.....	.....	.....
Toronto *	92.50	93.50	91.75	90.00	93.00	92.00	.....	.....	.....	92.00	.....	.....	.....
	115.00	*113.00*	*116.00*	*120.00*	*123.00*	*126.00*	*142.00*	*135.00*	*145.00*	.....	.....	.....	.....

† F.o.b. mill. * F.o.b. city, CL, out of yard. ** F.o.b. city, CL, direct mill shipment. ‡ Deliv. to contr. CL. 1. Retail, LCL, at yard. # Retail, LCL, deliv. 2. Deliv. truck lots. 3. sad., truckload lots, 8/8 Mfitbm

LUMBER: Bold Face Type, Southern Pine. Italics, Douglas Fir. *a Spruce. *b Tax exempt. *c 8M lots. *d 8, 10, & 12 ft. lengths. *e 8 to 18 ft. lengths. *f Hemlock *g No. 1 common. *j 8 ft. lengths. *k No. 3 common. *l Incl rail rate from North west mills to San Francisco are $11.50 to $15.00 per M ft. bm. From Northern Calif. mills $9.00 by rail, $9.50 by truck. All rates for surfaced stock. For rough, add $3.00 to above figures. *m Up to 16' *R revised

PLYWOOD (Plyform, oiled and edge sealed): Douglas fir, 4' x 8' panels, 5-ply sanded 2 sides, carload lots, delivered per 1000 sq. ft. surface. Seattle base price, interior, moisture resistant, ¾", $168.00; ¼", $186.00. Exterior, waterproof, ¾" $170.00; ¼", $190.00. For other centers add rail freight increment from table on proper size. *a Lower rate by water shipment. *b 50,000 lbs. minimum.

GLASS, EXPLOSIVES, CHEMICALS

	WINDOW GLASS Discounts from jobbers list, Feb. 1, 1950a Single or Double Strength A quality	B quality	EXPLOSIVES Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 200 lb. lots*	
Atlanta	78%c	78%e	$0.2615	
Baltimore	74%d	76%d	.2615	
Birmingham	82%	83%	.2465	
Boston	72–10%	72–10%	.2615	
Chicago	72%	72%	.2615	
Cincinnati	74%	74%	.2615	
Cleveland	74–2–10%	74–2–10%	.3015	
Dallas	76%	76%	.2690	
Denver	74%	74%	.2665	
Detroit	74–10–10%	74–10–10%	.2615	
Kansas City	74–10–10%	74–10–10%	.2665	
Los Angeles	70%	76%e	.2640	
Minneapolis	71–10%	71–10%	.2665	
Montreal	40–10–5%bc	40–10–5%b	22.05h	
New Orleans	75%	76%	.2665	
New York	79–10%	79–10%	.45g	
Philadelphia	74–10%	75–10%	.2615	
Pittsburgh	72%	72%	.2615	
St. Louis	72–10–10%	72–10–10%	.2665	
San Francisco	60%–25%	68%–25%	.2615	
Seattle	67%	72%	.2640	

Price of 60% Ammonia Gelatin is $0.15 per lb. higher than 40% in U. S., $1.75 per 100 lbs. higher in Canada.

Glass: *a Jobbers' list price per box, 14 x 20, ss, $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $60.00 for A quality, $52.75 for B quality. *b sales tax extra. *c 77% or single strength. *d Discount 6/15/52. *e 77% for double strength.

Explosives: * Cartridges of 1¼", 1½", 1¾", 2", 2¼", 2½", 3" diameters. Urban prices influenced by service charges or local storage and delivery regulations do not consistently reflect quantity prices in less congested areas. *g In borough of Kings, Queens, and Richmond and in Manhattan south of Canal St., add delivery charge of $20.00 per trip. *h F.o.b. Bellowell (near Montreal), per 100 lb. forcite, 40%. Forcite 60%, $23.80

40% Ammonia Gelatin price ranges in other than urban areas, per lb. (except Seismograph Grades)

	C/L 20,000 lb. net	Tons	200 lb. lots
E of the Miss., except Fla and Me...	$0.2065	$0.2465	$0.2615
W of Miss. to Rocky Mtn. States, Fla. and Maine	.2115	.2515	.2665
Rocky Mtn. States	.2115	.2515	.2665
Pacific N. W. States	.2090	.2490	.2640
Pacific S. W. States	.2065	.2465	.2615

PILES, TIES F. O. B.

PILES

Prices per linear foot, fir and pine, bark off, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine based on freight from Norfolk.

Dimensions	Points	Length	By Rail Pine*	Fir
12-in. at butt	6-in.	30 to 50-ft.	$0.51	....
12-in.—2-ft. from butt	6-in.	50 to 59-ft.	.54	....
12-in.—2-ft. from butt	6-in.	60 to 69-ft.	.58	....
12-in.—2-ft. from butt	6-in.	90 to 100-ft.	....	....
13-in.—3-ft. from butt	5-in.	91 to 100-ft.	....	....
14-in.—2-ft. from butt	6-in.	50 to 69-ft.	.50/.68	....
14-in.—2-ft. from butt	6-in.	70 to 79-ft.	.78/.88	.93
14-in.—2-ft. from butt	5-in.	80 to 85-ft.	.88/93	.94
14-in.—2-ft. from butt	5-in.	85 to 89-ft.	....	1.00
14-in.—2-ft. from butt	5-in.	90 to 100-ft.	....	1.02

* Pine piling over 80-ft. available only in limited quantities.

RAILWAY TIES

Prices f.o.b. per tie box carload lots:

		8' x 8" x 8' Untr.	8' x 8" x 8' Tr.	7' x 8" x 8'6" Untr.	7' x 8" x 8'6" Tr.
Birmingham*	Hardwood, Grade 3	$1.70	$2.55	Gr. 5 $2.25	$3.33
	Grade 2	1.50	2.35	" 4 2.10	3.18
	Grade 1	1.15	2.00	" 3a 1.70	2.78
Chicago	Red Oak	....	3.80a	....	4.40a
New York	S. L. Sap Pine	2.00	4.00	3.00	6.00g
	Mixed Oak	2.50	4.50	3.50	6.50g
Philadelphia	Red Oak	2.85/4.05	4.40/4.60	3.20/3.40	4.40/4.60
St. Louis	Mixed Oak	2.75	3.50a	3.00h	3.85ah
San Francisco	Douglas Fir	1.91ef	2.80ef	2.69ef	4.07caf

Tr.—Treated; Untr.—Untreated. a Creosoted. c Empty cell. e Green f.o.b. cars. g 7 x 9 x 8' 6" * Add 75¢/tie freight charge to Birmingham. *h 7" x 9" x 9½"

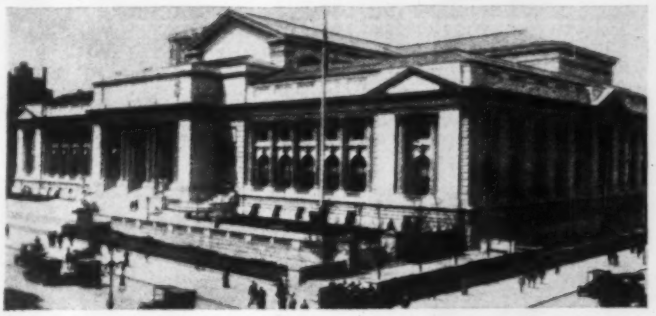
CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb	$5.02
Chlorine cylinders, liquid, per lb. f.o.b. works	.11
Calcium chloride, 77–80%, flaked, 100-lb. paper bag, f.o.b. works, ton	31.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb	2.65
Soda ash, 58%, in paper bags, per 100 lb. dense	1.90
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	2.05
Sulphate of copper, in bags, 99% per 100 lb. f.o.b. works	11.05

When Lord Electric Company wired the New York Public Library 51 years ago, the company was already a leader in what was then a relatively new field.

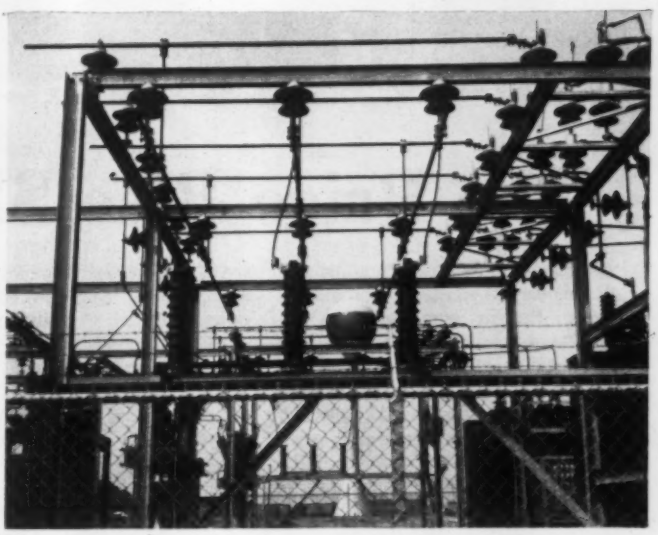
These days, Lord ranks not only as one of the largest electrical contractors in the United States, but as one of the truly veteran firms of its kind. Since 1895, Lord has unconditionally guaranteed the quality of performance on each of its thousands of jobs, earning an unexcelled reputation for workmanship and integrity.



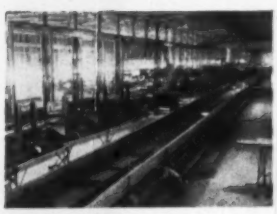
1907-1958

Representative of its current contracts is Lord's role in the electrification of such industrial projects as that shown in these pictures. Lord's clients include leading companies and government agencies in all parts of the country, with jobs ranging from stores and office buildings to industrial projects and highly technical AEC and defense projects.

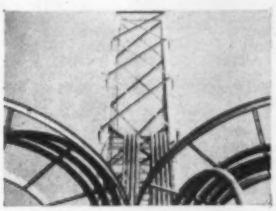
This company is interested in bidding on your next electrical installation. A note from your desk will bring a history of the firm, a review of its work, and financial references by return mail. Address: Lord Electric Co., Inc., 10 Rockefeller Plaza, New York 20, N. Y.



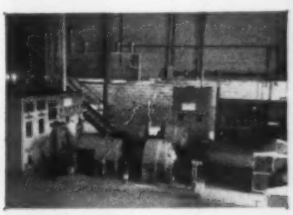
Partial view of 16000 KVA-24.6KV outdoor substation. Three lightning arresters in the foreground, flanked by two 500 KVA transformers on the right, and two 24.6 KV oil circuit breakers on the left.



PARTIAL VIEW of a 36,000 pound draw bench which is used to draw either copper or brass tubes. This machine can draw tubes 125' long and will be operated by one man.



ONE OF 3 steel towers which form part of the catenary for carrying the cable rack and the 4160 volt 3/C Armolok cables 300' from the outdoor switch gear into the mill area for distribution.



TWO KW—250 VOLT DC motor generator sets showing the high voltage AC input cubicles in rear and the DC distribution cubicles on left with multi-conductor "Armolok" cables being used for distribution.

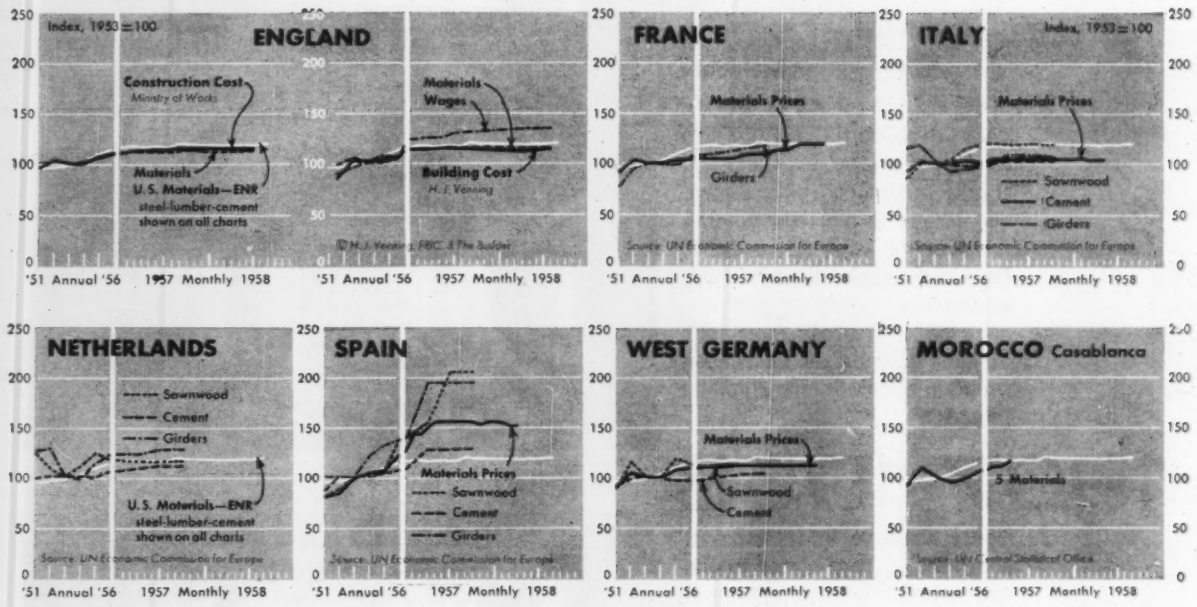
MAIN VARIABLE SPEED drive cabinet converting AC power to DC and regulating it to operate one of the draw benches. The panel is entirely automatic, requiring only the touch of a button to make it run all day.

LORD ELECTRIC COMPANY, INC.

BOSTON NEW YORK PITTSBURGH PORTLAND, ORE.

Established 1895

Third Quarterly Round up: **Cost Trends Around the World**



The Price Rise Slows in Overseas

Price trends of key construction materials in overseas markets vary sharply this year. But in many countries the rise that started in 1956 is tapering off.

Chief reasons for greater price stability abroad are a serious loss of foreign exchange and political upheaval, which slowed down construction activity. These developments helped stabilize prices. But new signs point to quick recovery in countries where demand is lagging. Prices will probably move up with demand.

• **Europe**—The recession is curtailing construction demand and bringing lower materials prices or at least a slower rise. Wages are moving up less than last year in most countries: In **Holland,** all materials prices are down except cement and sand, while wages are up 10% to 20%.

West German materials prices are softening. Steel prices are higher than

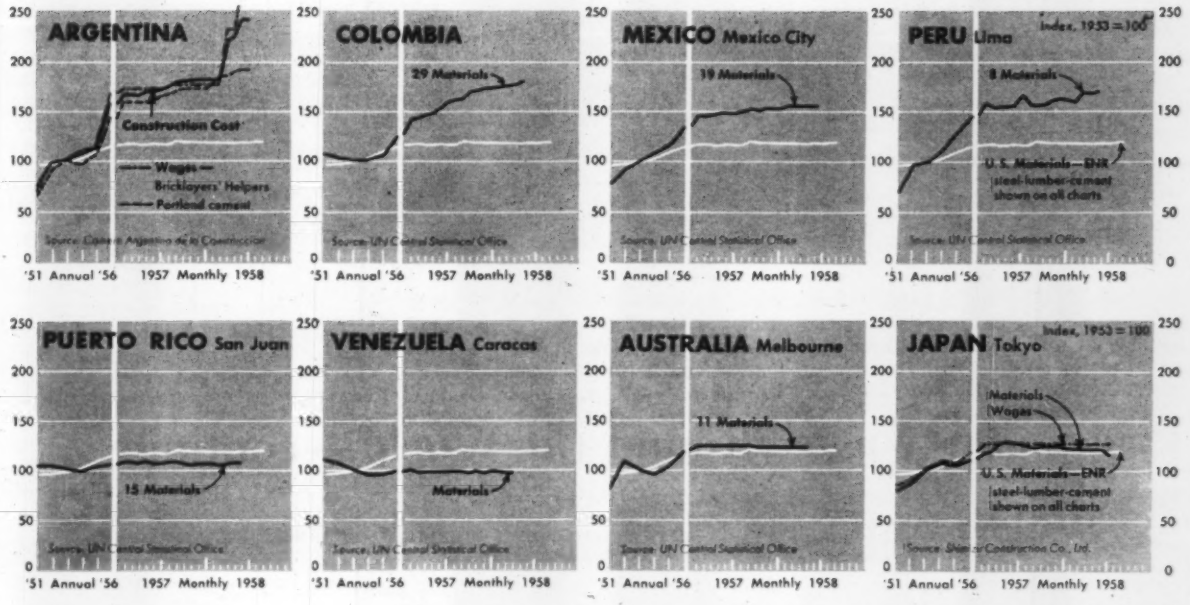
Construction Materials Prices &

Reported to Engineering News-Record in National Currency

. . . Europe . . .

	Amsterdam (The Netherlands)		Bonn (Germany)		London (England)		Madrid (Spain)		Paris (France)		Rome (Italy)	
	1958	1957	1958	1957	1958	1957	1958	1957	1958	1957	1958	1957
Official Exchange per $1	3.79	3.79	4.19	4.19	7/2	7/2	42	42	420	350	624.80	624.80
	Florin		Deutsche Mark		Shillings		Pesetas		Francs		Lire	
MATERIALS:												
Structural Steel Shapes	489.20*A*	535.00*A*	470.00*A*	456.00*A*	£ 44/9/6*Ba*	£ 42/–/–*Bb*	11,000*Ac*	6,861*Ad*	70,260*A*	62,660*A*	8,500*ef*	10,000*eg*
Reinforcing Steel Bars	443.50*A*	528.50*A*	480.00*A*	462.00*A*	43/–/–*Ba*	40/–/–*Bb*	7,000*Ac*	5,175*Ad*	64,110*A*	57,200*A*	8,700*e*	9,100*e*
Portland Cement	61.50*A*	61.50*A*	74.50*A*	74.50*A*	5/4/6*Ba*	5/4/6*Ba*	820*Ab*	792*Ac*	9,309*A*	8,712*A*	1,180*d*	1,060*d*
Lumber: 1st Class Pine	.....	.....	265.00*C*	285.00*C*	140/–/–*ab*	140/–/–*ab*	5,000*C*	4,500*C*	40,682*Ce*	38,218*Ce*	42,000*Cfg*	42,000*Cfg*
2nd Class Pine	.....	.....	245.00*C*	250.00*C*	98/–/–*ac*	102/–/–*ac*	4,000*C*	3,500*C*	31,090*C*	28,103*C*	38,000*Cfg*	38,000*Cfg*
Other	224.00*C*	234.00*C*	220.00*C*	230.00*C*	.....	.....	.....	.....	.....	.....	75,000*Cfg*	55,000*fA*
Gravel	7.84*A*	8.13*A*	6.50*C*	6.50*C*	1/4/6*a*	1/3/6*a*	80*C*	120*C*	3,005*Cb*	2,695*Cb*	1,800*Cc*	1,600*Cc*
Sand	5.63*A*	5.63*A*	9.00*Ca*	9.00*Ca*	1/7/8*bc*	1/6/6*bd*	30*C*	70*C*	2,725*Ce*	2,424*Cf*	900*Cg*	950*Cg*
LABOR: A												
Common Labor:												
Heavy Construction	2.511	2.321	3.17	3.06	–/4/1½*a*	–/3/11½*b*	90.75*c*	n.a.	249	229	341	309
Building	.....	.....	3.10	2.92	–/4/1½*a*	–/3/11½*b*	90.75*c*	n.a.	249	229	360	309
Skilled Labor:												
Bricklayers	2.511	2.321	3.53	3.34	–/4/7*a*	–/4/6*b*	108.13*c*	n.a.	429	394	388	346
Carpenters	2.511	2.321	3.53	3.34	–/4/7*a*	–/4/6*b*	108.13*c*	n.a.	424	348	427	380
Structural Ironworkers	2.340	2.157	3.38	3.20	–/4/5*a*	–/4/4*b*	108.13*c*	n.a.	407	369	388	326

•A per metric ton •B per long ton •C per cu meter •STRUCTURAL STEEL SHAPES: •a fob London; fob mill 39/16/6 •b fob London; fob mill 37/11/6 •c official; black market 20,000 •d official; black market 14,000 •e per 100 kilo •f 80x100mm, 7900-8500, fob mill •g 80x100mm, 9800-10,000, fob mill •REINFORCING STEEL BARS: •a fob London; fob mill 40/9/– •b fob London; fob mill 37/4/– •c official; black market 12,000 •d official; black market 12,500 •e per 100 kilo,fob mill •CEMENT: •a fob London •b official and black market •c official; black market 1200 •d type 680 high resistance, delivered, per 100 kilo. •LUMBER: •a 165 cuft, •ex wharf •b 115-140 •c 95-98 •d 97-102 •e 1"x3.2" Vosges •f delivered •g fir •h pitch pine •GRAVEL: •a per cu yd •b 1 in. •c 2-3 cm; 5 cm 1500 •SAND: •a washed •b per cu yd •c fob London; outside London –/21/– •d fob London; outside London –/20/6 •e fine; coarse 2717 •f fine; coarse 2418 •g river sand •LABOR: •A includes social charges and fringe benefits •a add –/8/1 per week unemployment and health insurance •b add –/8/2 per week insurance •c per week •n.a. rate not available.



Markets

last year; but lumber is down; cement and aggregate prices are steady. Wages are up slightly.

In **England** steel and aggregate prices and wage rates are rising, but at a slower rate; cement prices are steady; lumber is down.

Spanish construction volume is way down, but prices are rising fast, especially steel. Aggregate prices are down slightly. Wages are advancing slowly.

In **France,** construction costs are up 11% over a year ago, with materials prices and wages up sharply this year. **Italy** reports a general price softening. While wages and cement, gravel and lumber prices are slightly higher, steel products and sand are down.

• **Latin America**—Prices and wages are up sharply from a year ago in some countries, but are down in others: **Colombia's** boom has ended; materials inventories are piling up. Structural steel shape prices are down, while other materials are rising less this year than last. **Argentina** is the big exception to Latin American price stability with building costs a whopping 41.9% higher than last year. Materials prices are way up and construction workers won big wage increases. **Venezuela** prices are in a tailspin. Reinforcing bars, lumber, cement and gravel are below a year ago; structural shapes are unchanged. Further price declines can be expected. In **Peru,**

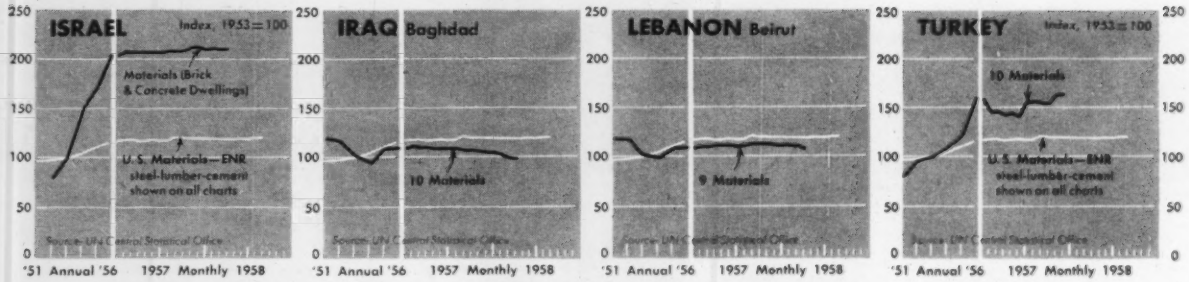
Wages 'Round the World—June '58

Prices are Fob and Wages are per Hour, except as noted

Latin America . . . **. . . Africa . . .**

	Bogota (Colombia)		Buenos Aires (Argentina)		Caracas (Venezuela)		Lima (Peru)		Mexico City (Mexico)		San Juan (Puerto Rico)		Casablanca (Morocco)	
	1958	1957	1958	1957	1958	1957	1958	1957	1958	1957	1958	1957	1958	1957
Official Exchange per $1	6.85 Pesos	4.80	18 Pesos	18	3.33 Bolivars	3.35	19.00 Soles	23.50	12.50 Pesos	12.50	$1.00		420 francs	350
MATERIALS:														
Structural Steel Shapes	1,120*A*	1,200*A*	6,000*A*	5,500*A*	750*A*	750*A*	5.20*B*	4.80*B*	2,400*Aa*	2,100*A*	11.00*C*	12.00*C*	64,200*A*	64,900*A*
Reinforcing Steel Bars	995*Aa*	930*Aa*	4,870*A*	4,000*A*	450*A*	580*A*	3.20*B*	3.00*B*	1,800*A*	2,000*A*	6.00*Cb*	8.50*Cb*	58,400*Ac*	59,000*Ac*
Portland Cement	117*A*	105*B*	774*A*	668*A*	101*A*	122*A*	17.52*a*	17.52*a*	240*A*	240*A*	1.10*C*	1.10*C*	8,900*Ab*	8,370*Ab*
Lumber: 1st Class Pine	....	....	58*b*	45*c*	300*D*	320*D*	3.90*h*	4.00*h*	1,900*E*	2,000*E*	165.00*E*	155.00*E*	31,000*Di*	28,300*Di*
2nd Class Pine	....	....	51*d*	40*e*	280*D*	290*D*	3.80*h*	3.80*h*	1,700*E*	1,700*E*	115.00*E*	120.00*E*	28,000*Di*	25,100*Di*
Other	6.30*a*	5.20*a*	60*f*	46*g*	270*D*	280*D*	3.50*h*	3.40*h*	900*E*	n.a.	....	....	29,150*Dj*	25,350*Dj*
Gravel	21.50*D*	17.00*D*	305*D*	260*D*	14*D*	16*D*	44.00*Da*	41.00*Db*	78*c*	82*c*	3.90*Dd*	3.75*Dd*	1,130*D*	1,000*D*
Sand	19*Da*	14*Da*	85*Db*	62*Dc*	18*D*	18*D*	24.00*Da*	21.00*Da*	80*d*	77*d*	2.45*D*	2.55*D*	650*D*	585*D*
LABOR: A														
Common Labor:														
Heavy Construction	1.08	1.08	178.18*b*	109.50*b*	12	12	50.68	45.40	1.38	1.38	.68	.63	80-93	67-80
Building	1.80	1.80	178.18*b*	109.50*b*	12	12	49.28	41.35	1.38	1.38	.81	.67	81-94	67-80
Skilled Labor:														
Bricklayers	1.44	1.44	237.57*b*	146.00*b*	25	18-20	73.12	61.20	2.48	2.48	1.16	1.07	158	125
Carpenters	1.44	1.44	237.57*b*	146.00*b*	25	18-20	73.12	61.20	2.48	2.48	1.16	1.02	198	154
Structural Ironworkers	1.44	1.44	237.57*b*	146.00*b*	29	25	109.67	90.85	3.77	3.77	1.88	1.45	226	177

*A per metric ton *B per kilo *C per cwt *D per cu meter *E per Mfbm *STRUCTURAL STEEL SHAPES: *a 2100-3100 *b I-beams, 1,065-1,080 *REINFORCING BARS: *a ¾"-1" *b European steel; American 8.25 *c 3-12 mm diam *CEMENT: *a per 42 kg sack *b bulk; fob mill *LUMBER: *a per .04 cu m *b spruce, 3"x4", per sq m, 56-58 *c spruce, 3"x4", per sq m, 43-45 *d 1"x6", per sq m, 50-51 *e 1"x6", per sq m, 39-40 *f 1"x12", per sq m, 57-60 *g 1"x12", per sq m, 44-46 *h per bd ft *i imported *j cedar *GRAVEL: *a 1"; 2" 41.00 *b 1"; 2" 32.00 *c 3 cu meters, ¾"-2½" *d 1½" *SAND: *a washed *b coarse; fine 85.00 *c coarse; fine 62.00 *d per 3 cu meters *LABOR: *A incl. fringe benefits and social charges. *b per day incl. social charges.



price trends are mixed. Structural steel shapes, reinforcing bars, gravel and sand are all up, but cement and lumber are steady or down. Greater price stability is expected soon. **Mexico** also shows mixed trends. Structural steel shapes and sand are up; cement prices and wages are stable; lumber, reinforcing bars and gravel are down. In **Puerto Rico** wage rates, gravel and lumber prices are up; cement is steady; other materials are down.

• **Far East**—Construction industries are currently very weak. Severe construc-

Prices and Wages 'Round the World—continued

...Middle East...

	Baghdad (Iraq) 1958	Baghdad (Iraq) 1957	Beirut (Lebanon) 1958	Beirut (Lebanon) 1957	Istanbul (Turkey) 1958	Istanbul (Turkey) 1957	Tel Aviv (Israel) 1958	Tel Aviv (Israel) 1957
Official Exchange per $1	.357 Dinar	.357 Dinar	3.25 Lebanese Pound	3.19 Lebanese Pound	2.80 Turkish Lira	2.80 Turkish Lira	1.80 Israeli Pound	1.80 Israeli Pound
MATERIALS:								
Structural Steel Shapes	60.00*D*	65.00*D*	.54*B*	.48–.70*B*	1200.*Aa*	575.*Aa*	476.*Ab*	550.*Aa*
Reinforcing Steel Bars	55.00*D*	60.00*D*	.34*B*	.435*B*	1300.*Aa*	650.*Aa*	439.*A*	475.*A*
Portland Cement	7.50.*A*	7.50*a*	62.50.*A*	63.50.*A*	85.*Aa*	85.*Aa*	88.5.*A*	84.*A*
Lumber: 1st Class Pine	45.00*Ca*	50.00*Ca*	225.00*Cc*	235.00*Cc*	700*C*	400*C*	450*C*	450*C*
2nd Class Pine	27.00*Cb*	30.00*Cb*	175.00*Ced*	190.00*Cd*	500*C*	300*C*	255*C*	255*C*
Other							230*Ce*	230*Ce*
Gravel	2.00.*A*	2.00.*A*	7.50*C*	7.00*C*	33*Ca*	22.5*Ca*	4.6*C*	4.6*C*
Sand	1.50.*A*	1.50.*A*	5.00*C*	4.00*C*	30*Cb*	20*Cb*	2.2*C*	2*C*
LABOR: A								
Common Labor:								
Heavy Construction	300–400*bc*	300–400*bc*	1.00–1.10	.75–.85	9.72*b*	7.56*b*	8.895*b*	8.620*b*
Building	500*bc*	500*bc*	1.50	.80–1.00	21.60*b*	18.06*b*	.....	.....
Skilled Labor:								
Bricklayers	1250–1500*bc*	1250–1500*bc*	1.50–2.00	1.50–2.00	21.60*b*	18.06*b*	10.645*b*	10.315*b*
Carpenters	1250–1500*bc*	1250–1500*bc*	1.50–2.00	1.50–2.00	24.30*b*	18.90*b*	10.645*b*	10.315*b*
Structural Ironworkers	1250–1500*bc*	1250–1500*bc*	2.00	2.00	21.60*b*	18.06*b*	.....	.....

...U.S. Possessions...

	Anchorage (Alaska) 1958	Anchorage (Alaska) 1957	Honolulu (Hawaii) 1958	Honolulu (Hawaii) 1957
Official Exchange per $1	$1.00	$1.00	$1.00	$1.00
MATERIALS:				
Structural Steel Shapes	11.50*E*	10.00*Ec*	10.15*Ed*	9.75*Ec*
Reinforcing Steel Bars	10.50*Eb*	9.45*Eb*	8.50*Ec*	8.10*Ed*
Portland Cement	8.15*Fb*	8.05*Fc*	5.13*Fd*	4.98*Fc*
Lumber: 1st Class Pine	95.00*Gf*	135.00*Gf*	185.00*Gh*	175.00*Gh*
2nd Class Pine	95.00*Gf*	135.00*Gf*	.....	.....
Other	113.00*Gf*	125.00*Gg*	.....	.....
Gravel	2.80.*D*	2.80.*D*	2.80.*D*	2.80.*D*
Sand	5.00*Fc*	5.00*Fc*	4.00.*D*	4.00.*D*
LABOR: A				
Common Labor:				
Heavy Construction	3.81	3.41	1.75	1.55
Building	3.81	3.445	1.95	1.75
Skilled Labor:				
Bricklayers	5.09	4.61	300	2.75
Carpenters	4.25	3.37	2.65	2.45
Structural Ironworkers	4.56	4.235	2.80	2.65

*A per metric ton *B per kilo *C per cu meter *D per short ton *E per cwt *F per bbl *G per Mfbm *STRUCTURAL STEEL SHAPES: *a average price *b imported *c fob dock, Seattle *d local; imported 8.15 *e local; imported 7.80 *REINFORCING STEEL BARS: *a average price *b fob dock, Seattle *c local; imported 7.60 *d local; imported 7.40 *CEMENT: *a average price *b fob Anchorage; fob dock Seattle 4.40 *c fob Anchorage; fob dock Seattle 4.35 *d bulk; sack 5.63 *e bulk; sack 5.48 *LUMBER: *a Canadian clear *b white deal *c Swedish fir *d whitewood *e European spruce *f fir *g spruce or hemlock *h no. 1 fir with 15–20% std grade *GRAVEL: *a medium *b summer; winter 7.00; delivered *SAND: *a coarse *b washed *c summer; winter 7.00; delivered *LABOR: *A incl fringe benefits and social charges *b per day *c rate in fils (1000 fils = 1 Dinar)

...Asia...

	Bombay (India) 1958	Bombay (India) 1957	Colombo (Ceylon) 1958	Colombo (Ceylon) 1957	Karachi (Pakistan) 1958	Karachi (Pakistan) 1957	Manila (Philippine Islands) 1958	Manila (Philippine Islands) 1957
Official Exchange per $1	4.12 Rupees	4.12 Rupees	4.76 Rupees	4.76 Rupees	4.76 Rupees	4.76 Rupees	2.00 Pesos	2.00 Pesos
MATERIALS:								
Structural Steel Shapes	720.*Aa*	690.*Ab*	886.*A*	900.*A*	2,500.*Ac*	2,200.*Ad*	459.*B*	430.*B*
Reinforcing Steel Bars	800.*Aa*	680.*Ab*	749.*A*	800.*A*	1,450.*Ac*	1,800.*Ad*	500.*Be*	410.*Bf*
Portland Cement	131/3.*A*	117/8.*A*	190.*A*	200.*A*	140.*A*	120.*A*	4.70*a*	3.30*a*
Lumber: 1st Class Pine	10*Ca*	12*Ca*	...	...	18*Cc*	18*Cc*	...	...
2nd Class Pine	...	...	...	...	...	...	...	...
Other	6/4*Cb*	8*Cb*	23*C*	23*C*	15*Cd*	10/8*Ce*	230*f*	275*g*
Gravel	42*a*	42*a*	18.*A*	18.*A*	55*b*	50*c*	6.*Bd*	6.*Be*
Sand	55*a*	55*a*	5.*A*	5.*A*	30*b*	30*b*	5.*Bc*	5.*Bd*
LABOR:								
Common Labor:								
Heavy Construction	0/6/0	0/6/0	.495	.37	0/7/0	0/6/0	.50	.50
Building	0/8/0	0/8/0	.495	.37	0/6/0	0/6/0	.50	.50
Skilled Labor:								
Bricklayers	0/12/0	0/12/0	.58¼	.46	1/2/0	1/2/0	.75–1.25	.75–1.25
Carpenters	1/0–1/2	0/12/0	.58¼	.46	1/2/0	1/2/0	.625–1.25	.625–1.25
Structural Ironworkers	1/4/0	1/4/0	.58¼	.46	1/2/0	1/2/0	.75–1.25	.75–1.25

...and Australia

	Melbourne (Australia) 1958	Melbourne (Australia) 1957	Tokyo (Japan) 1958	Tokyo (Japan) 1957
Official Exchange per $1	9 Shillings	9 Shillings	360 Yen	360 Yen
MATERIALS:				
Structural Steel Shapes	£ 55.*Ae*	£ 52/15.*Af*	40,000*Bg*	60,000*Bg*
Reinforcing Steel Bars	57.*Ag*	56.*Ah*	35,000*Bi*	50,000*Bi*
Portland Cement	11.*Ab*	11/8.*Ac*	7,000*B*	7,400*B*
Lumber: 1st Class Pine	17/5*h*	19/10*i*	4,100*l*	4,100*l*
2nd Class Pine	...	...	3,700*l*	3,700*l*
Other	8/14*j*	9/19*k*	...	...
Gravel	1/13/4*Df*	1/13/3*Df*	8,400*g*	9,100*g*
Sand	1/17/0*D*	1/17/0*D*	4,400*e*	5,500*e*
LABOR:				
Common Labor:				
Heavy Construction	23/15/10.*Aa*	23/10/8.*Ab*	79	79
Building	23/15/10.*Aa*	23/10/8.*Ab*	66	66
Skilled Labor:				
Bricklayers	26/9/11.*A*	25/2/5.*A*	100	100
Carpenters	25/14/2.*A*	24/6/10.*A*	93½	93½
Structural Ironworkers	22/1/6.*Ac*	20/15/3.*Ad*	100	100

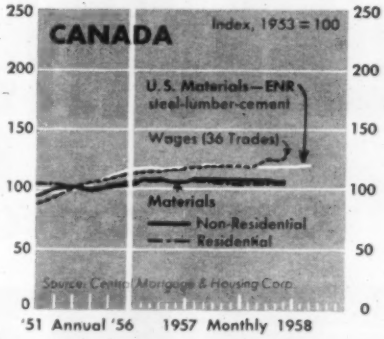
*A per long ton *B per metric ton *C per cu ft *D per cu yd *STRUCTURAL STEEL SHAPES: *a tested; 680 untested *b tested; 640 untested *c 1800 to 2500 *d 1800 to 2200 *e Australian; 70-80 imported *f Australian; 70-80 imported *g fob job site *REINFORCING BARS: *a tested; 750 untested *b tested; 630 untested *c 1350 to 1450 *d 1600 to 1800 *e ⅜"; ½" 490 *f ⅜"; ½" 400 *g Australian; 75-80 imported *h Australian; 73-82 imported *i fob job site *CEMENT: *a per 94 lb sack *b local; 14.6 imported, fob store or wharf *c local; 13/10/9 to 15/15/0 imported *LUMBER: *a Indian teak wood *b Vella pine *c 16 to 18 *d Deodar, 8 to 15 *e Deodar, 8–8 to 10–8 *f Red Luan, 180–230, per Mfbm *g Red Luan, 250–275, per Mfbm *h 15/2 to 15/5, per 100 fbm *i 15/10 to 19/6, per 100 fbm *j 6/19 to 8/14, per100 fbm *k 8/6/6 to 9/1/9 *l per koku (=12 fbm) *GRAVEL: *a broken stone, per 100 cu ft *b 45 to 55, per 125 cu ft *c 42 to 50, per 125 cu ft *d 5.47–6.00 *e 5.00–6.00 *f ¼ in topping *g per tsubo (=216 cu ft) *SAND: *a per 100 cu ft *b 26 to 30, per 125 cu ft *c 4.27–5.00 *d 4.50–5.00 *e per tsubo (=216 cu ft) LABOR: *A per 40 hr week *a 19/18/0 to 23/15/10 *b 19/14/0 to 23/10/8 *c 14/0/8 to 22/1/6 *d 13/14/6 to 20/15/3

tion cutbacks are reflected in generally lower prices: Materials in **India** are in tight supply. Steel product and cement prices are up, but lumber and aggregate are down. Wages are steady. Serious labor unrest in **Ceylon** forced 1958 wages up sharply. But all materials prices are steady or below last year. **Pakistan** prices are rising slowly, but cement shortages are pushing prices up rapidly. Common labor rates are up, skilled wages unchanged.

Australian building costs are down, with costs of residential structures off 12½% from last year. Materials supplies are good, prices except for steel are off. Labor is in tight supply, wages are up slightly. **Japan's** construction activity is much reduced. Materials prices and building costs are down substantially. Average building costs are down 7.5%, while wages are fixed.

• **Middle East and Africa**—Price trends vary considerably. Materials and labor costs continue to rise, but the rate is slowing in most countries: **Iraq** reports steel and lumber prices below last year's, with other materials prices and wage rates steady. **Lebanon's** boom has collapsed, bringing lower prices for all materials except sand and gravel. Common labor rates are up, but skilled wages are steady. **Turkey** presents a sharply different picture. Materials prices except cement have soared, with labor rates also above a year ago. **Israel** wage rates also above a year ago. **Israel** wage slightly, but lumber and gravel prices are stable; steel product prices are down. **Morocco** suffers from French inflation. All wages and prices except steel are up sharply.

Cost Trends in Canada Are Up



Construction costs continue upward. ENR's Montreal Building Cost Index in September is 0.6% under a year ago, but the Construction Cost Index is up only 2.6%. Toronto's Building Cost Index is 0.1% higher, while the Construction Cost Index is up 1.3%.

Across the nation, August non-residential construction costs rose 1.4% above a year ago and residential costs are up 1.2%, the Central Mortgage & Housing Corp. reports (see table and chart).

Biggest factor in the cost rise is the wage push. Average rates for key trades in 11 cities are 6.0% higher than a year ago, compared to '56-'57 rise of 5.2%.

By contrast, materials prices, especially lumber and cement, are down. ENR's Materials Cost Index for lumber, steel, and cement shows a 3.4% drop in Montreal and a 1.5% decline in Toronto. Montreal warehouses announced that steel price hikes will not be passed on to the customer. But prices will probably firm up because of the recent upturn in Canadian construction.

Canadian Wage and Cost of Living Changes—1949–'58

Canadian Construction Association

Unweighted average wage rate increases for 8 principal construction occupations (including vacation pay allowances)

	PERCENT INCREASE							
	In wage rates				In cost of living			
City	'49–'58*	'55–'56*	'56–'57*	'57–'58*	'49–'58*	'55–'56*	'56–'57*	'57–'58*
Halifax	50.6	0.0	9.2	0.0	22.8	1.1	2.8	2.9
Saint John	55.8	3.0	2.6	7.0	24.7	1.2	3.1	1.9
Montreal	68.0	3.8	4.5	8.3	25.0	2.1	2.4	2.5
Ottawa	65.7	4.7	4.1	7.4	25.4	2.0	3.4	1.6
Toronto	61.9	5.1	4.1	5.8	28.4	2.4	3.3	2.3
Winnipeg	73.6	4.0	6.5	6.0	22.6	1.8	2.0	2.2
Regina	60.4	2.3	4.9	3.3	21.9a	1.1a	3.2a	2.2a
Saskatoon	57.2	4.0	3.4	3.9	21.9a	1.1a	3.2a	2.2a
Calgary	64.1	3.0	7.1	7.7	21.3b	1.4b	2.9b	1.8b
Edmonton	55.4	3.8	2.3	7.7	21.3b	1.4b	2.9b	1.8b
Vancouver	65.5	0.8	9.0	8.4	24.6	2.4	2.0	2.4
Average, 11 cities	61.7	3.1	5.2	6.0	23.4	1.6	2.8	2.2

* July 1 to July 1 •a Saskatoon-Regina index •b Edmonton-Calgary index

Canada Construction Cost Indexes—1949=100

Central Mortgage Housing Corp.

NON-RESIDENTIAL			RESIDENTIAL		
'39 57.9	'49	100.0	'39 48.1	'49	100.0
'40 60.0	'50	105.1	'40 51.2	'50	106.0
'41 63.9	'51	118.8	'41 56.0	'51	123.1
'42 67.2	'52	125.4	'42 60.0	'52	126.6
'43 69.5	'53	128.9	'43 63.7	'53	128.9
'44 70.5	'54	128.6	'44 66.4	'54	129.0
'45 71.1	'55	131.5*	'45 67.2	'55	132.7*
'46 75.0	'56	136.5	'46 70.4	'56	137.5
'47 84.3	'57	141.5	'47 80.9	'57	141.3
'48 95.3	'58May	143.5	'48 95.0	'58May	143.0

Weighted indexes of wholesale prices and wage rates. Intangibles, productivity, etc., not included. * Revised

Canadian Building Trades Wage Rates July 1, 1958

Dominion Department of Labour and Canadian Construction Association

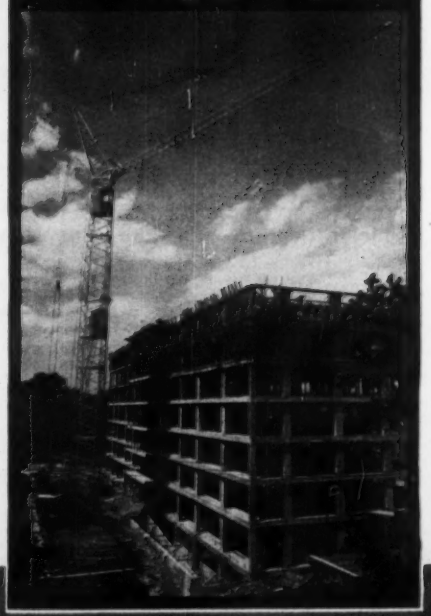
	BRICKLAYERS				CARPENTERS				ELECTRICIANS				PAINTERS			
City	1939	1945	1957	1958	1939	1945	1957	1958	1939	1945	1957	1958	1939	1945	1957	1958
Halifax a	$1.00	$1.15	$2.09	$2.09b	$0.70	$0.95	$1.84	$1.84b	$0.85	$1.06	$1.94	$1.94b	$0.60	$0.81	$1.60	$1.60b
Saint John	0.90	1.10	1.92	2.00	0.50–0.60	0.81	1.58	1.75	0.50–0.65	0.85	1.70	1.75	0.50–0.55	0.76	1.51	1.60
Quebec	0.75–0.85	1.00	1.90	2.00	0.55–0.60	0.80	1.70	1.80	0.55–0.65	0.80	1.80	1.90	0.50–0.55	0.75	1.60	1.70
Montreal	0.80–0.90	1.06	2.20	2.30	0.70	0.96	2.00	2.10	0.75	1.01	2.00	2.20	0.66	0.86	1.90	2.00
Toronto	1.00	1.23	2.71	2.85	0.90	1.11	2.50	2.50b	1.00	1.21	2.80	2.90	0.75	0.97	2.05	2.27
Hamilton	0.90	1.19	2.50	2.70	0.75	1.04	2.20	2.50	0.75	1.05	2.40	3.00	0.65	0.86	1.75	2.05
Windsor	1.15	1.26	2.55	2.67½	0.95	1.18	2.22c	2.50c	1.15	1.26	2.35	2.60	0.60–0.65	0.95	1.93	1.98
Winnipeg	1.10	1.25	2.35c	2.50c	0.85	1.05	2.15	2.30	0.85	1.05	2.35	2.45	0.70	0.90	1.90	2.00
Saskatoon	1.00	1.20	2.35	2.44	0.50–0.75	0.96	2.00	2.09	0.70–0.80	0.93	2.05	2.35	0.50–0.70	0.70	1.80	1.80f
Edmonton	1.10	1.31	2.40	2.60	0.90	1.03	2.00	2.35	0.85	1.06	2.50	2.65	0.80	0.91	1.80	1.80b
Vancouver	1.10	1.29	2.60	2.75	0.75–0.90	1.12	2.44	2.68	0.75–1.00	1.19	2.81d	2.99de	0.63–0.80	0.97	2.35	2.60

	PLASTERERS				PLUMBERS				SHEETMETAL WORKERS				LABORERS			
City	1939	1945	1957	1958	1939	1945	1957	1958	1939	1945	1957	1958	1939	1945	1957	1958
Halifax a	$0.80	$0.95	$1.98	$1.98b	$0.85	$1.025	$1.93	$1.93b	$0.70	$0.85	$1.70	$1.70b	0.30–0.40	$0.52	$1.33	$1.33b
Saint John	0.90	1.10	1.92	2.00	0.60–0.70	0.88	1.80	1.80	0.50–0.65	0.81	1.50	1.50–1.55	0.30–0.40	0.53	0.80	1.00
Quebec	0.75	1.00	1.90	2.00	0.55–0.65	0.80	1.80	1.90	0.55–0.65	0.80	1.70	1.80	0.40	0.60	1.30	1.40
Montreal	0.80	1.06	2.17	2.35	0.75	1.01	2.22	2.32	0.65–0.75	0.96	2.00	2.10	0.40	0.61	1.40	1.50
Toronto	0.90	1.21	2.60d	2.70d	1.00	1.17	2.44h	2.85h	0.93	1.18	2.55g	2.55fg	0.35–0.50	0.67	1.55	1.65
Hamilton	0.90	1.07	2.45d	2.60d	0.85	1.07	2.45	2.70h	0.75	1.04	2.45	2.45b	0.35–0.45	0.65	1.40	1.55
Windsor	0.90	1.15	2.40	2.53	1.00	1.25	2.55	2.75	0.70–0.85	1.06	2.35	2.50	0.55	0.75	1.66	1.86
Winnipeg	1.10	1.25	2.35	2.35f	0.95	1.15	2.40	2.55	0.70	0.85	2.10	2.20	0.40–0.45	0.63	1.30	1.45
Saskatoon	0.75–1.00	1.06	2.30	2.30	1.00	1.06	2.25	2.30	0.75–0.90	0.81–0.85	1.96	2.04	0.30–0.40	0.58	1.43	1.43f
Edmonton	1.05	1.31	2.35	2.50	1.05	1.16	2.35	2.50	0.90	1.07	2.25	2.60	0.40–0.50	0.61	1.48	1.60
Vancouver	1.00	1.10	2.50g	2.60g	1.00	1.19	2.70j	2.70ej	1.00	1.18	2.35	2.75	0.45–0.50	0.71	1.66	1.88i

•a wage rates do not include hourly allowance in lieu of vacation pay •b in conciliation •c 10¢ per hour deducted from wage rate for welfare plan •d plus 8¢ welfare contribution by employer •e lockout •f negotiating •g plus 10¢ per hour welfare contribution by employer •h plus 8¢ per hour welfare contribution by employer •i plus 7¢ per hour welfare contribution by employer •j plus 1.8% of basic rate for statutory holidays

THE OLD WAY IS COSTLY

Construction Crane

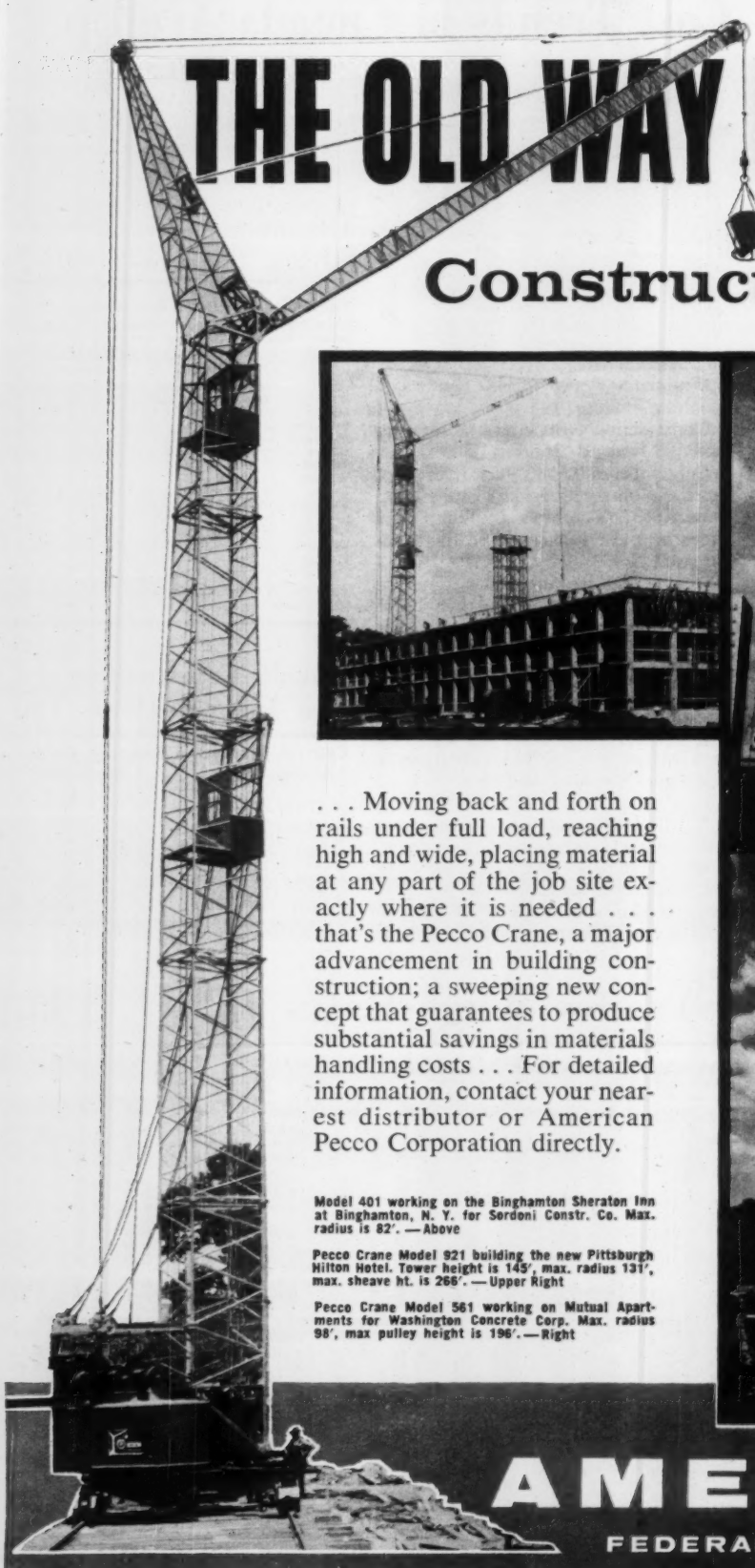


. . . Moving back and forth on rails under full load, reaching high and wide, placing material at any part of the job site exactly where it is needed . . . that's the Pecco Crane, a major advancement in building construction; a sweeping new concept that guarantees to produce substantial savings in materials handling costs . . . For detailed information, contact your nearest distributor or American Pecco Corporation directly.

Model 401 working on the Binghamton Sheraton Inn at Binghamton, N. Y. for Sordoni Constr. Co. Max. radius is 82'. — Above

Pecco Crane Model 921 building the new Pittsburgh Hilton Hotel. Tower height is 145', max. radius 131', max. sheave ht. is 266'. — Upper Right

Pecco Crane Model 561 working on Mutual Apartments for Washington Concrete Corp. Max. radius 98', max pulley height is 196'. — Right

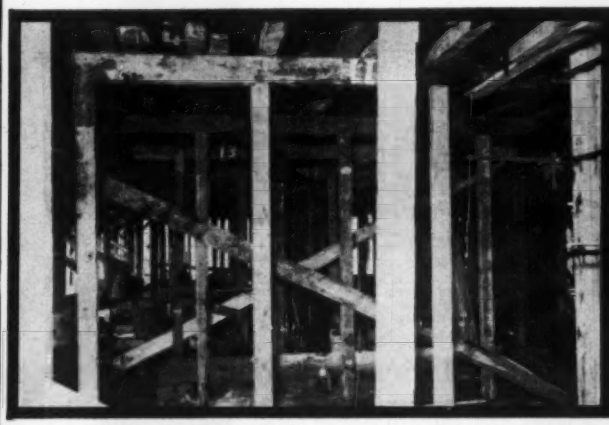


AMERICAN

FEDERAL SAVINGS BUILDING

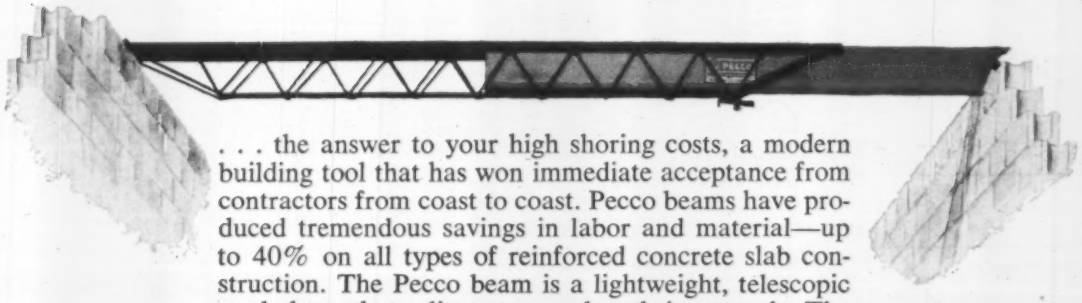
...THE NEW WAY IS PECCO!

Horizontal Shoring Beam



Pecco Beams completely outmode the old traditional and wasteful vertical support method.

Using Pecco Beams, large areas are left open under the shoring for working, carting and storing materials.



. . . the answer to your high shoring costs, a modern building tool that has won immediate acceptance from contractors from coast to coast. Pecco beams have produced tremendous savings in labor and material—up to 40% on all types of reinforced concrete slab construction. The Pecco beam is a lightweight, telescopic steel shore that adjusts to any length in seconds. The stroke of an ordinary hammer opens or closes the simple wedge lock and sets the required camber. Three basic Pecco units are manufactured for spans ranging from 8′6″ to 27′7″—and are available for rent or sale. For a carefully engineered proposal on your job, contact your nearest distributor or American Pecco Corp.

AD 36-4

PECCO CONSTRUCTION CRANE

SEVERAL CHOICE DISTRIBUTORSHIPS AVAILABLE

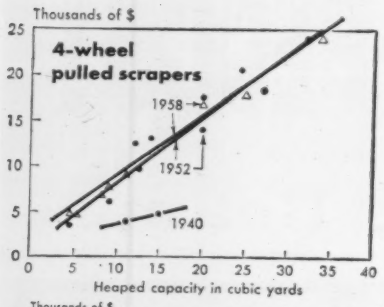
PECCO HORIZONTAL SHORING

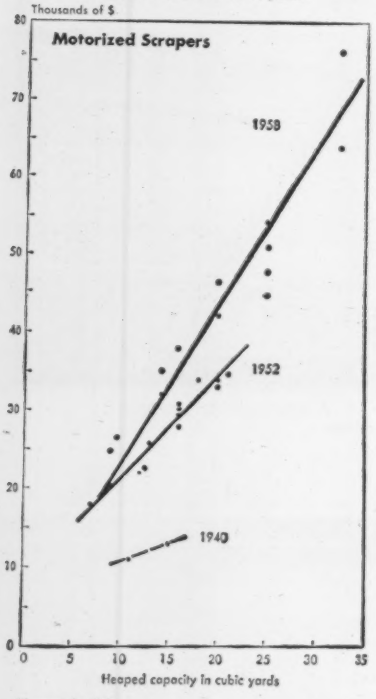
PECCO CORPORATION

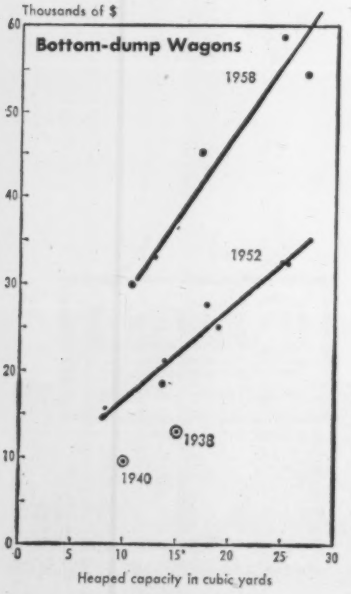
188 EAST POST RD., WHITE PLAINS, NEW YORK

Third Quarterly Round up: **Equipment Prices & Rental Rates**

Prices Steady, . . .





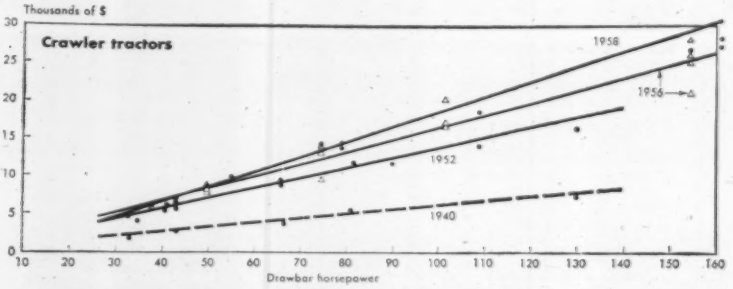


Construction equipment prices marked time during the nine months ending August 1958, largely because of stiff sales competition in a lagging market.

The U. S. Bureau of Labor Statistics index of manufacturers' prices was a record 165.6 (based on 1947-49 = 100) on August 15. Though this is 2.6% above July 1957, it's about the same as last October's index.

There's a chance some firms may prod prices up a bit in the next few months. Sales turned up months ago with the rise in heavy construction contracts and this may encourage equipment makers to pass on, for example, the August hike in steel costs.

The charts show how prices of excavating and earthmoving machines, FOB plant, increase with the size of capacity of the machine and how they



Construction Machinery Price Trend

BLS Primary Market Price Indexes, U.S. Department of Labor, 1947-49=100

	1947	1949	1950	1951	1952	1953	1954	1955	1956	1957	Aug. 1958
All Types of Equipment	90.0	108.3	111.5	123.6	125.4	129.3	131.6	137.1	148.6	160.0	165.6
Cranes, Draglines, Shovels	91.0	107.5	110.8	123.5	123.9	127.8	130.9	138.1	149.1	159.9	163.8
Shovel, ½ cu yd	92.5	105.2	108.6	123.1	123.7	126.4	128.6	134.1	143.5	151.1	154.0
Shovel, ¾ cu yd	90.7	107.2	112.8	127.5	128.8	133.4	133.3	140.3	153.4	163.1	167.7
Shovel, 1-1½ cu yd	87.8	109.9	114.2	127.6	127.2	135.3	136.6	144.7	159.2	171.3	178.4
Shovel, 2-2½ cu yd	92.3	105.1	110.5	126.0	124.3	124.7	126.4	126.7	134.4	146.6	154.4
Shovel, 3-3½ cu yd	89.7	108.7	113.6	126.7	129.1	130.2	130.8	133.3	146.0	157.3	162.7
Shovel, 6 cu yd	84.5	112.2	117.0	129.8	131.7	136.7	138.8	145.4	160.9	175.3	180.7
Crane, truck mounted	90.1	108.3	112.4	126.4	126.4	131.6	133.7	141.5	154.5	162.3	164.2
Crane, tractor mounted	94.2	104.4	106.4	110.0	110.0	110.3	111.9	115.6	120.3	129.8	135.1
Bucket, clam shell	91.8	109.2	110.3	116.7	119.1	122.6	124.5	130.6	137.0	152.7	152.7
Bucket, dragline	93.1	107.4	104.0	112.6	112.6	119.2	134.9	155.4	166.6	180.8	180.8
Scrapers and Graders	89.0	108.8	112.0	128.0	128.9	129.0	129.4	133.1	142.8	153.1	158.8
Scraper, 4 Wheel, 8-10.5 cu yd	91.3	107.8	110.9	125.4	126.0	126.0	126.7	128.9	139.2	152.6	155.0
Scraper, 4 Wheel, 12-15 cu yd	94.4	104.7	107.7	127.1	126.9	124.4	124.4	126.1	134.3	146.2	151.3
Scraper, 2 Wheel, 14-18 cu yd (a)								100.0	109.2	116.6	122.7
Grader, heavy duty	88.2	109.2	112.3	127.1	128.6	133.0	134.8	137.8	147.6	158.2	164.0
Grader, light & medium	85.5	111.4	114.7	130.2	131.1	129.7	129.4	135.4	146.1	155.9	161.2
Tractors	87.7	110.2	113.7	125.1	128.7	136.3	140.4	145.7	160.5	173.2	180.5
Wheel-type, Off-highway (a)								100.0	113.0	121.6	128.4
Crawler type, under 45dhp	89.5	108.3	111.5	121.9	128.0	135.5	142.3	148.3	160.3	170.4	179.1
45-60 dhp	89.1	109.3	112.7	125.1	128.8	135.6	139.0	145.0	161.0	175.9	182.6
60-80 dhp	86.1	110.9	113.5	123.6	126.9	137.2	141.7	146.8	164.6	179.6	185.8
80-120 dhp	87.3	111.0	114.1	124.6	127.9	137.3	140.6	148.2	164.7	177.6	186.2
120 & up dhp	86.8	110.9	116.4	130.1	136.5	143.9	150.4	154.1	169.9	182.7	191.8
Machinery, Tractor Mounted	87.6	109.6	112.5	122.9	129.9	132.4	133.8	136.7	145.8	157.6	161.7
Dozer, cable control	82.7	113.0	115.2	122.6	134.2	140.2	141.4	143.0	148.5	150.1	151.6
Dozer, hydraulic control	87.2	109.8	112.6	122.9	134.0	136.8	138.9	143.3	155.2	172.8	177.3
Cable, power control unit	89.0	107.2	109.2	123.1	121.8	122.2	123.1	126.6	133.0	142.4	147.9
Loader, shovel type	91.1	108.3	111.9	123.4	124.5	125.1	125.7	127.4	136.9	149.6	153.9
Specialized Machinery	91.5	105.8	109.7	119.5	119.3	122.8	123.4	126.0	136.2	145.4	150.7
Ditcher	87.4	108.3	111.4	118.6	118.7	121.7	124.2	129.2	142.5	152.2	154.1
Roller, tandem	96.7	101.7	113.6	130.9	129.2	144.3	146.0	147.5	164.3	182.3	193.2
Roller, 3 wheels	95.6	102.9	110.1	124.8	126.9	130.8	131.4	132.0	143.3	155.5	161.6
Ripper and rooter	90.5	108.5	109.3	116.7	115.6	114.4	116.7	118.4	126.0	138.9	143.3
Dewatering pump, 10 M gph	92.1	106.7	107.0	109.7	107.7	107.8	103.8	101.4	106.1	108.8	111.7
Dewatering pump, 90 M gph	88.6	110.2	111.5	117.0	117.0	117.9	115.8	119.9	125.7	134.1	144.3
Portable Air Compressors	93.6	105.4	109.6	124.8	124.8	124.8	125.1	133.1	135.8	151.4	159.1
Capacity, under 200 cfm	91.3	107.7	112.1	127.9	127.9	127.9	128.4	137.1	141.2	157.0	163.7
Capacity, over 200 cfm	95.8	103.1	107.1	121.7	121.7	121.7	121.7	129.2	130.3	146.0	154.6
Contractors Air Tools	93.0	106.0	108.1	120.5	120.5	123.3	125.0	128.3	144.9	156.3	164.5
Paving breaker	93.0	106.0	107.8	119.7	119.7	123.6	126.0	.....	144.4	156.1	164.6
Mixers, Pavers, Spreaders	92.7	107.5	108.4	118.0	118.1	121.3	122.0	127.7	135.3	143.4	150.1
Mixer, portable, 6 cu ft	92.8	105.5	108.6	120.2	120.5	123.4	124.4	130.6	137.9	145.2	151.5
Mixer, portable, 11 cu ft	93.9	105.1	110.6	125.7	124.3	127.0	127.5	137.8	146.8	152.9	160.1
Mixer, portable, 16 cu ft	93.7	105.6	108.8	120.9	121.8	125.5	127.5	138.2	146.3	155.5	163.7
Mixer, truck, 6 cu yd	95.7	104.5	107.5	117.3	117.3	111.2	108.4	109.1	114.8	121.9	127.3
Mixer, paving, 34 cu ft	93.6	106.5	117.5	126.8	127.9	130.5	132.5	143.1	155.9	172.1	185.2
Concrete finisher and spreader	93.1	107.0	109.9	121.6	122.3	135.8	143.0	150.5	160.4	169.3	181.5
Bituminous distributor	90.2	112.9	103.9	106.7	106.7	108.3	105.0	103.9	109.6	115.9	122.4
Bituminous spreader	91.8	107.8	111.8	119.6	119.6	119.6	119.6	135.7	145.7	159.5	160.3
Bituminous paver	90.4	107.2	110.1	118.2	119.7	129.7	136.9	140.5	145.3	151.4	153.0

*a January 1955=100

. . . Some Rentals Dip

have changed 1940-58. The straight lines are fitted to the points by the "least squares method."

Several types of construction equipment are renting at lower rates this year than last. The Associated Equipment Distributors' 1958 compilation of rates for informational purposes only shows, however, most of the rental rates covered are higher than last year (ENR Oct. 17, 1957, p. 141). Biggest increases are for cranes and shovels.

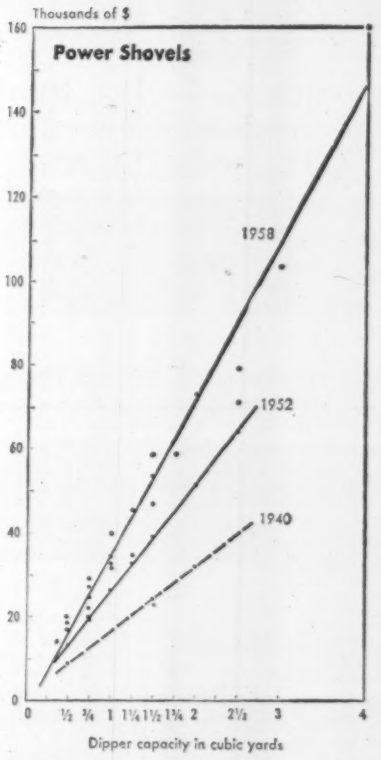
Construction Machinery Rental Rates—1958

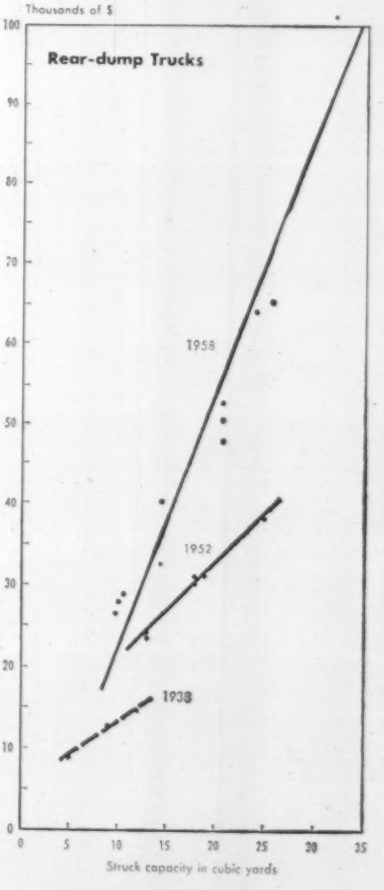
Associated Equipment Distributors, Chicago, Ill.

All rates are fob lessor's warehouse or shipping point. Lessee pays transportation costs to destination and return. Rates do not include operator, fuel or oil. Lessor bears cost of repairs due to normal wear and tear on non-tractor equipment, the lessee bears all other costs. For tractor and rubber-tired hauling equipment, the lessee bears all costs for maintenance and repair. Rates are based on one shift of 8 hours per day, 40 hours per week, 175 hours per month of a 30 consecutive day period. Overtime is prorated on a per-hour basis. Equipment is delivered to lessee in good operating condition and returned in as good condition less normal wear. Excessive cleaning or repairs may be charged to lessee. Rental rates start when equipment leaves lessor's delivery point. All rents are payable in advance. No insurance, license, sales or use taxes are included in these rates.

Type of equipment	Per Month	Per Week	Per Day	Chg. '57-'58 †%
AIR COMPRESSORS portable				
Gas, 86–105 cfs	$187.00	$62.50	$18.75	−1
Gas, 126–160 cfs	249.00	83.00	24.50	+1
Gas, 186–210 cfs	336.00	110.00	33.50	+1
Gas, 251–315 cfs	451.00	147.00	45.50	+1
Diesel, 186–210 cfs	415.00	137.00	44.00	+1
Diesel, 251–315 cfs	545.00	179.00	57.75	+2
Diesel, 366–500 cfs	748.00	247.00	79.75	−1
Diesel, 501–600 cfs	928.00	310.00	101.00	+2
CRANES, cap at ft radius				
Diesel crawler (no bucket)				
Above 5 , to 6½ ton, 10′	949.00	311.00	105.00	+6
Above 6½ to 8½ ton, 12′	1147.00	383.00	138.00	+6
Above 8½ to 11½ ton, 12′	1295.00	428.00	147.00	+4
Above 14½ to 19½ ton, 12′	1492.00	494.00	168.00	+4
Above 24½ to 29½ ton, 12′	2163.00	733.00	247.00	+2
Above 29½ to 34½ ton, 12′	2451.00	814.00	272.00	+7
Above 18 , to 22 ton, 20′	3120.00	1040.00	334.00	+8
Above 10 , to 13 ton, 45′	4125.00	1388.00	457.00	+7
Above 20 , to 24½ ton, 45′	5292.00	1809.00	607.00	+6
GRADERS, diesel rubber tired				
Conventional transmission				
Up to 16,500 lbs	661.00	217.00	68.75	+1
16,501 to 20,500 lbs	807.00	262.00	80.50	−3
22,501 to 26,000 lbs	1084.00	367.00	117.00	−3
26,001 to 30,000 lbs	1290.00	426.00	138.00	+1
Torque converter				
16,000 to 21,000 lbs	1078.00	345.00	109.00	−3
21,001 to 25,000 lbs	1265.00	427.00	139.00	−2
25,001 to 29,500 lbs	1459.00	473.00	155.00	0
29,501 to 45,000 lbs	1923.00	654.00	214.00	0
LOADERS (SHOVEL), tractor				
Front end, wheel, mounted, front or rear drive, gas				
Up to ¾ cy	326.00	104.00	36.50	−1
Above ¾ up to 1½ cy	375.00	126.00	39.25	−2
Above 1½ up to 2½ cy	424.00	141.00	44.75	0
Above 2½ up to 3½ cy	492.00	172.00	53.00	−4
Above 3½ up to 1 cy	580.00	198.00	62.25	−5
Above 1 , up to 1¼ cy	718.00	244.00	76.75	−5
Above 1¾ up to 2 cy	1231.00	399.00	123.00	+1
MIXERS, CONCRETE, portable				
Tilt drum, 3 to 3½ cf	68.25	24.00	8.15	+5
Tilt drum, 6 to 9 cf	105.00	37.25	12.25	n.a.
Non-tilt, non pwr charge, 3½ cf	83.00	29.00	10.00	0
Non-tilt, power charge, 6 cf	129.00	44.50	14.75	+3
11 cf	186.00	65.25	22.75	+2
16 cf	270.00	93.50	32.75	+5
Add for batchmeter*	14.00	5.10	1.85	+12
Add for pump*	12.25	4.30	1.55	+20
*Rates include measuring tank but not this				
PUMPS**				
Centrifugal, self priming				
Gas, 1½-in, 4M	51.50	18.00	5.90	+3
Gas, 2-in, 7M–10M	63.00	21.75	7.35	+3
Gas, 3-in, 15M–20M	78.25	27.00	9.15	+2
Gas, 4-in, 30M–40M	119.00	41.25	14.00	+2
Gas, 6-in, 90M	181.00	61.00	20.75	+1
Diesel, 6-in, 90M	359.00	122.00	41.75	0
Diesel, 8-in, 125M	543.00	187.00	60.00	+2
**Hose not included				
ROLLERS				
Two-axle tandem, diesel				
5–8 tons*	560.00	129.00	58.50	+4
6–9 tons	611.00	199.00	68.25	+1
8–10 tons	665.00	215.00	72.25	+3
8–14 tons	719.00	240.00	78.75	+1
10–14 tons	862.00	276.00	86.25	+6
10–16 tons	1183.00	318.00	95.25	−4
*Net roller wt—max gross wt incl ballast				
†Percentage change in average monthly rates				

Type of equipment	Per Month	Per Week	Per Day	Chg. '57-'58 †%
SHOVELS, diesel crawler				
⅜ cy	$971.00	$323.00	$107.00	+5
½ cy	1242.00	421.00	140.00	+4
¾ cy	1518.00	519.00	176.00	+5
1 cy	1975.00	655.00	217.00	+7
1½ cy	2835.00	930.00	309.00	+7
2 cy	3887.00	1331.00	431.00	+7
2½ cy	4577.00	1567.00	524.00	+5
3 cy	5910.00	1941.00	638.00	+4
3½ cy	6660.00	2210.00	721.00	+6
SCRAPERS, w.o. power units				
Heaped mass				
Above 5, up to 7 cy	359.00	116.00	38.00	−1
Above 7, up to 10 cy	506.00	167.00	53.75	+4
Above 10, up to 13½ cy	607.00	197.00	63.00	+2
Above 13½ up to 18 cy	724.00	242.00	75.00	0
Above 17, up to 22 cy	938.00	328.00	104.00	−1
Above 22, up to 29 cy	1259.00	416.00	136.00	+3
Above 29, up to 37 cy	1776.00	555.00	182.00	+1
TRACTOR AND SCRAPER				
2-wheel tractor with 2-wheel scraper (heaped mass)				
From 7 up to 11 cy	1541.00	543.00	171.00	+2
From 13 up to 16 cy	2199.00	756.00	248.00	+2
From 16 up to 21 cy	2561.00	871.00	290.00	0
From 18 up to 20 cy	2815.00	999.00	335.00	−3
From 25 up to 27 cy	3475.00	1205.00	382.00	+1
TRACTORS, diesel crawler				
Gear drive, w.o. attachments				
25–35 drawbar hp	430.00	145.00	45.75	−1
36–44 drawbar hp	540.00	179.00	57.00	+2
45–59 drawbar hp	700.00	234.00	74.75	+1
60–71 drawbar hp	812.00	271.00	91.00	−1
72–79 drawbar hp	995.00	337.00	107.00	0
80–95 drawbar hp	1039.00	348.00	110.00	+1
96–115 drawbar hp	1344.00	446.00	142.00	+1
116–131 drawbar hp	1388.00	463.00	152.00	+3
132–150 drawbar hp	1574.00	512.00	163.00	+2
151–170 drawbar hp	2039.00	668.00	211.00	+2
201–265 drawbar hp	2939.00	969.00	296.00	+5
Torque Converter, without attachments				
120–144 net engine hp	1542.00	512.00	159.00	+1
145–164 net engine hp	1681.00	566.00	187.00	−3
165–185 net engine hp	1781.00	574.00	194.00	−4
186–214 net engine hp	2272.00	743.00	241.00	+1
251–330 net engine hp	3569.00	1195.00	386.00	+7
over 330 net engine hp	4226.00	1420.00	502.00	+6
BULLDOZERS				
For crawler tractors of				
38–44 drawbar hp	165.00	55.00	17.75	0
72–79 drawbar hp	251.00	84.25	29.25	+1
96–115 drawbar hp	296.00	96.25	32.75	0
132–150 drawbar hp	361.00	124.00	40.75	−3
201–265 drawbar hp	497.00	169.00	55.00	+3
For 4-wheel rubber tired tractor				
191–250 engine hp	1036.00	380.00	151.00	+3
TRENCHING MACHINES				
Ladder or vertical boom:				
Diesel, 4′,* 12″**	1248.00	416.00	134.00	+3
Diesel, 5′, 18″	1263.00	435.00	138.00	+3
Diesel, 8½′, 36″	1471.00	564.00	193.00	+3
Wheel type:				
Diesel, 5½′, 24″	1212.00	393.00	134.00	+3
Diesel, 6′, 31″	1980.00	658.00	222.00	+3
Diesel, 6′, 36″	2374.00	791.00	266.00	+3
*Max depth **Max width				
TRUCKS, off-highway, rear dump				
Single axle, body capacity				
Above 7½ up to 10 tons	1812.00	613.00	.....	+15
Above 10, up to 15 tons	2139.00	740.00	.....	+3
Above 15, up to 20 tons	2623.00	809.00	.....	+15
Above 20, up to 23 tons	2907.00	913.00	.....	−2
Above 23, up to 25 tons	3443.00	1095.00	.....	n.a.





Third Quarterly Round up: **Equipment Prices & Rental Rates**

Canada Rates Use Replacement Cost

Construction equipment rental rates are pegged to replacement cost in Canada rather than to original cost as in the U. S. They thus reflect current prices rather than prices months or years out of date.

This table, appearing in ENR for the first time, shows the percentage of replacement cost (Col. F) for figuring the monthly rental under normal conditions.

In compiling these revised 1958 rates, the Canadian Construction Association uses straight-line depreciation and allows 20% for overhead and profit (interest 5%, storage facilities 4%, insurance in storage 1%, and office overhead and profit 10%).

Equipment Rental Rates in Canada

Canadian Construction Association, Ottawa, Canada

Key to columns used in calculation: % of Replacement Value
(A) Depreciation & obsolescence
(B) Overhaul; major repairs; painting
(C) General overhead & profit
(D) Total of (A), (B) & (C)
(E) Average use in months per year
(F) Monthly rental rate as % of replacement value

Type of Machine	(A) %	(B) %	(C) %	(D) %	(E)	(F) %
AIR COMPRESSOR						
Portable, diesel & gas	16	12	20	48	8	6.0
Self-propelled, high pressure	25	15	20	60	9	6.7
Stationary or tractor mounted						
Low pressure	12	10	20	42	5	8.4
Pressure—50-115 psi	14	10	20	44	6	7.3
AIR TOOLS & ACCESSORIES						
Drift driver	33	15	20	68	5	11.3
Drill, rotating, metal ½" to 3"	33	15	20	68	6	13.6
wood 1" to 4"	25	15	20	60	5	12.0
Grinder, concrete surfacing	33	16	20	69	6	11.5
Hammer, caulking & chipping	33	15	20	68	6	11.3
paving breaker	40	18	20	78	7	11.1
riveter	33	15	20	68	6	11.3
sheeting driver	17	15	20	52	5	10.4
Hoist, 1-drum, SLP, up to 750 lb.	17	10	20	47	6	7.8
1000 lb & up	14	10	20	44	6	7.3
Hose with couplings	100	15	20	135	7	19.3
Pump, pneumatic sump, tandem	33	20	20	73	5	14.6
Rock drill, boom mounted attachment, incl controls	20	16	20	56	7	8.0
Drifter or jackhammer	40	18	20	78	6	13.0
Pipeliner, 2 or 4 drill	25	15	20	60	7	8.6
Stoper	40	18	20	78	6	13.0
Wagon drill, self-propelled	20	16	20	56	7	8.0
towed	25	15	20	60	7	8.6
Saw, pneumatic, chain	33	21	20	74	4	18.5
oscillating blade	33	15	20	68	4	17.0
rotary, no blades	33	25	20	78	5	15.6
Sharpening equipment, forge	11	10	20	41	8	5.1
furnace, oil	12	15	20	47	6	7.8
sharpener w/dies for 1-size	14	8	20	42	6	7.0
Spade, clay & tamper, backfill	40	18	20	78	7	11.1
Vibrator, concrete, flexible	33	25	20	78	6	13.0
rigid	33	13	20	66	6	11.0
Wrench, impact, no sockets	33	10	20	63	5	12.6
AUTOMOBILE, Light	50	15	20	85	11	7.7
Medium	33	13	20	66	11	6.0
BALL, WRECKING	15	5	20	40	4	10.0
BAR BENDER, Electric	14	8	20	42	8	5.3
Gas	14	10	20	44	8	5.5
Hand	11	9	20	40	8	5.0
BAR CUTTER, Hand Operated	14	15	20	49	8	6.1
BATCHING EQUIPMENT, Concrete						
Batcher only	20	8	20	48	6	8.0
Bin, steel knockdown	12	10	20	42	6	7.0
Bin, aggr or stl w/trolley batcher	20	12	20	52	7	7.4
BITUMINOUS EQUIPMENT						
Distributor, not mounted	12	10	20	42	6	7.0
Heater, circulating & tank car	14	12	20	46	6	7.7
Kettle, tar & asphalt	11	6	20	37	6	6.2
Mixer, batch, portable gas	20	10	20	50	6	8.3
Mixing plant, central, to 50 tph	11	11	20	42	6	7.0
above 51 tph cap	10	10	20	40	6	6.7
Mixing plant towed, to 2 CYM	11	14	20	45	6	7.5
2 to 4 CYM cap	10	12	20	42	6	7.0
Spreader, aggr or sand, towed	16	8	20	44	6	7.3
Spreader & finisher, gas	16	12	20	48	6	8.0
Surface Heater, oil burning	16	10	20	46	6	7.7
Tank, storage	10	6	20	36	6	6.0
BLAST MAT, manilla or wire	100	—	20	120	6	20.0
BLOWER, CENTRIFUGAL, Air, Gas	20	10	20	50	6	8.3
Electric	11	8	20	39	6	6.5
BOILER, Locomotive to 150 BHP	12	10	20	42	6	7.0
Oil-fired stationary to 250 BHP	14	15	20	49	7	7.0
Vertical, coal-fired to 100 BHP	12	13	20	45	6	7.5
BUCKET, Caisson	12	15	20	47	4	11.8
Clamshell, excav up to 1 cy	17	17	20	54	6	9.0
1½ to 2½ cy	17	14	20	51	6	8.5
rehandling, ½ to 2½ cy	12	10	20	42	6	7.0
Concrete, bottom dump or lay-down, ½ to 1 cy	12	10	20	42	7	6.0
2 to 4 cy	14	12	20	46	7	6.6
Dragline, up to 1 cy	20	8	20	48	6	8.0
1½ to 3 cy	16	8	20	44	6	7.3
Buckets,—continued						
Scraper type, 1 to 2½ cy	20	10	20	50	6	8.3
Orange peel, all sizes	16	10	20	46	6	7.7
Rock grapple, 2, 3 or 4 tines	14	6	20	40	3	13.3
BUGGY, CONCRETE, gas	25	27	20	72	6	12.0
hand push	25	20	20	65	8	8.1
BUILDING, PORTABLE OR TRAILER	20	10	20	50	9	5.6
CEMENT GUN MACHINE	20	20	20	60	7	8.6
CEMENT PLANT, Bulk-transfer & Batch	14	10	20	44	6	7.3
COLUMN CLAMPS	20	10	20	50	9	5.6
CONVEYOR, BELT, Portable	20	20	20	60	6	10.0
Stationary	16	15	20	51	6	8.5
Flight, Portable	33	20	20	73	6	12.2
CRANE ATTACHMENTS						
Backhoe, w/bucket, up to 1½ cy	16	18	20	54	8	6.8
¾ to 1½ cy	14	18	20	52	8	6.5
Clamshell-Crane Boom, w/o bucket, up to ⅝ cy	16	15	20	51	8	6.4
¾ to 1¾ cy	14	15	20	49	8	6.1
2 to 8 cy	12	12	20	44	7	6.3
Dragline boom w/o bucket, ½ to ⅝ cy	16	17	20	53	8	6.6
¾ cy to 1¾ cy	14	17	20	51	8	6.4
2 cy to 8 cy	12	13	20	45	7	6.4
Shovel w/bucket, ½ cy to ⅝ cy	16	18	20	54	8	6.8
¾ cy to 1¾ cy	14	18	20	52	8	6.5
2 cy to 8 cy	12	14	20	46	7	6.6
CRANES, Basic machine only						
Diesel crawler, ¾ to 1¾ cy	14	9	20	43	9	4.8
2 cy to 6 cy	12	7	20	39	8	4.9
Diesel truck-mount, ¾ to 1½ cy	14	12	20	46	9	5.1
Gas truck-mount, up to ½ cy	16	15	20	51	9	5.7
¾ cy to 1 cy	14	12	20	46	9	5.1
Locomotive diesel, 10-15 tons	11	7	20	38	8	4.8
20-40 tons	11	6	20	37	8	4.6
Self-propelled, rubber tired Diesel or Gas, 5-10 tons	16	15	20	51	9	5.7
11-25 tons	14	12	20	46	9	5.1
CRUSHER, w/o access or power						
Cone or gyratory	10	9	20	39	7	5.6
Impact	14	13	20	47	7	6.7
Jaw, 4"x40" to 18"x36"	16	10	20	46	7	6.6
20"x36" to 48"x60"	14	7	20	41	7	5.9
Roll	14	10	20	44	7	6.3
DERRICK, Circle swing 1M-2.5M lb	12	15	20	47	8	5.9
Guy, steel, 3-50 ton	10	10	20	40	7	5.7
Stiffleg, steel, up to 50 tons	10	10	20	40	7	5.7
wood, up to 20 tons	16	12	20	48	7	6.9
Tower (Chicago Boom)	12	15	20	47	8	5.9
DIVING OUTFIT incl phone, pump	20	20	20	60	6	10.0
DRILL, Blast Hole	14	10	20	44	7	6.3
Earth augur, attach only	16	15	20	51	7	7.3
w/power	16	20	20	56	7	8.0
Well, trlr or tr mount	14	10	20	44	7	6.3
DUMPTOR, gas or diesel, 8 cy	16	12	20	48	8	6.0
ELECTRIC HAND TOOLS						
Drills, no bit, to 1¼" stl	50	10	20	80	8	10.0
Grinder, bench	25	10	20	55	7	7.9
flexible shaft	33	17	20	70	7	10.0
hand held	50	10	20	80	8	10.0
Hammer, no bits	33	20	20	73	7	10.4
Plane, Router or Sander	50	10	20	80	8	10.0
Saw, hand held chain	33	17	20	70	7	10.0
rotary w/o blade	33	20	20	73	7	10.4
Wrench, impact, w/o sockets	33	17	20	70	7	10.0
ENGINE, Diesel up to 160 hp	16	12	20	48	8	6.0
161-500 hp	12	10	20	42	7	6.0
Gas, 10-40 hp	20	16	20	56	8	7.0
41-100 hp	14	15	20	49	7	7.0
EXCAVATOR, cable, w/power, cables, tower, no bucket						
Drag Scraper, 2-3 cy	14	15	20	49	6	8.2
Slackline Cableway, 2-2½ cy	14	15	20	49	6	8.2
FINISHING MACHINE						
Concrete, electric	33	9	20	62	8	7.8
gas	33	15	20	68	8	8.5
Road Concrete, 10-25 ft	25	12	20	57	6	9.5
FLOODLIGHT	50	10	20	80	8	10.0
FORGE, RIVET	33	10	20	63	6	10.5
FORMS, STEEL, Road & Sidewalk	25	15	20	60	6	10.0
GENERATOR, Diesel, 21-100 kw	12	15	20	47	6	7.8
101-350 kw	11	12	20	43	6	7.2
Gas, 11-40 kw	12	15	20	47	6	7.8
GRADALL, Truck Mounted	16	15	20	51	8	6.4
GRADERS, Elevating, attach or tow	16	20	20	56	6	9.3
Finegrader 10-25 ft, selfpwr	20	20	20	60	6	10.0
Formgrader	20	20	20	60	6	10.0
Motor	16	12	20	48	8	6.0
Towed, powered control	14	12	20	46	7	6.6
HAMMER, Diesel or Gas, paving breaker type	25	18	20	63	7	9.0
HEATER, General type, oil fired, pressure tank	20	15	20	55	6	9.2
HOIST, Chain Block	20	16	20	56	7	8.0
Diesel*, 1-3 drum, to 40 hp	14	10	20	44	8	5.5
over 40 hp	12	10	20	42	8	5.3
Electric*, 1-3 drum	12	10	20	42	8	5.3
Steam*, w/boiler	12	10	20	42	8	5.3
w/o boiler	10	10	20	40	8	5.0
*w/o cable						
HOPPER, CONCRETE, Steel	20	15	20	55	8	6.9
HOSE, w/couplings, Discharge	60	10	20	90	6	15.0
Gunite, Jetting, Steam or suction	100	0	20	120	6	20.0
JACKS, Bridge, & Journal,	20	5	20	45	6	7.5
Screw & Track	20	5	20	45	8	5.6
Hydraulic	20	15	20	55	6	9.2
Ratchet	20	15	20	55	8	6.9
Mud, gas driven rubber tired	25	15	20	60	5	12.0
Trench	20	12	20	52	8	6.5
LOADER, Bucket or Belt, Self-prop	20	15	20	55	7	7.9
Tunnel, air or elec	25	15	20	60	7	8.6
LOCOMOTIVE, Standard or narrow ga						
Diesel, up to 10 tons	16	12	20	48	8	6.0
16-30 tons	11	12	20	43	8	5.4
Diesel-electric, 25-50 tons	10	10	20	40	8	5.0
51-100 tons	10	10	20	40	9	4.4
LUBRICATOR, Truck or Trailer Mounted	18	10	20	48	8	6.0
MIXER, CONCRETE						
Portable electric, 6S to 11S	20	12	20	52	8	6.5
gas, 3½S	33	15	20	68	8	8.5
6S to 11S	20	15	20	55	8	6.9
Stationary, w/o wtr tank, electric	14	10	20	44	6	7.3
gas 28S	16	12	20	48	6	8.0
Concrete paving	16	15	20	51	6	8.5
Agitator or truck	25	15	20	60	8	7.5
MIXER, MORTAR Portable	33	15	20	68	8	8.5
MIXER, ROAD, Portable	20	20	20	60	6	10.0
MOTOR, ELCTRIC w/base, start equip						
Squirrel Cage, 2 to 7½ hp	14	6	20	40	8	5.0
10 to 250 hp	11	6	20	37	8	4.6
Wound Rotor, Slip Ring, 10 to 250 hp	11	9	20	40	8	5.0
PILE MACHINERY						
Pile Extractor, w/o hose	16	12	20	48	6	8.0
Pull attachment	16	18	20	54	5	10.8
Pile Hammer, Diesel	20	15	20	55	7	7.9
Drop	11	5	20	36	6	6.0
Steam or air sgl act	17	12	20	49	7	7.0
Dbl act, to ½ ton	17	15	20	52	5	10.4
over ½ ton	17	12	20	49	7	7.0
Pile Leads, steel						
Fixed, up to 1 cy crane	12	12	20	44	6	7.3
1¼ to 2½ cy crane	11	10	20	41	6	6.8
Swinging, up to 70 ft	20	15	20	55	6	9.2
PIPE, w/coupl black or galv 1" to 1½" diam	33	5	20	58	8	7.3
2" to 4" diam	25	5	20	50	8	6.3
PIPE PUSHER, Mechanical or Hydraulic	20	15	20	55	6	9.2
PIT & QUARRY PLANT, Portable Crush-Screen-Load						
1-crush, light; or 2 crush, to 50 tph	20	15	20	55	7	7.9
1-crush, hvy; 2 crush, 51-150 tph	16	12	20	48	7	6.9
PLACER, CONCRETE, Pneu	16	10	20	46	6	7.7
PLOW, SNOW	20	10	20	50	5	10.0
PUMPCRETE, Electric or Gas	20	20	20	60	7	8.6
Pumpcrete pipe w/fittings, 6" 8"	33	15	20	68	7	9.7
PUMPS, w/o hose, pipe or couplings						
Centrifugal Belt, 1" to 10"	14	12	20	46	5	9.2
Diesel, 10" up	16	15	20	51	6	8.5
Electric 1½" to 10"	16	10	20	46	5	9.2
Gas, 2" to 3"	50	20	20	90	8	11.3
8" to 10"	20	15	20	55	6	9.2
Diaphragm, Electric, 2" to 4"	16	10	20	46	5	9.2
Gas, 2" to 4"	33	15	20	68	6	11.3
Jett (100psi), Elec to 750 gpm	16	10	20	46	5	9.2
Gas to 750 gpm	16	15	20	51	5	10.2
Piston, Grout, steam or air	16	20	20	56	4	14.2
Sinking, Piston, to 6" suct	12	10	20	42	4	10.5
Submersible	20	20	20	60	6	10.0
Sump, deep well electric, to 12"	16	12	20	48	5	9.6
gas, to 12" diam	16	15	20	51	5	10.2
RIPPER, TRACTOR DRAWN	16	12	20	48	6	8.0

Have you investigated this foundation method?

These structures, like a great many others throughout the world, have one important feature in common — *all are built on Franki foundations*. The main reason that Franki was chosen for this work was because of the unique Franki Displacement Caisson — an end-bearing foundation unit with an expanded base forged by ramming the concrete with 140,000 ft. lb. blows. These are some of the resulting advantages:

- In granular soils, the standard Franki Displacement Caisson will carry loads of 120 tons or more.
- Saving in costs of reinforced concrete caps because fewer caissons are required.
- Franki Displacement Caissons are immune to the effects of a fluctuating water table because they are strictly end-bearing.
- A considerable saving in length compared with friction piles is possible due to the expanded base.
- Numerous successful load tests — compression and uplift — have been conducted to confirm the bearing capacity of the caissons.

Franki work is guaranteed.

Franki quotations are usually lump sum without qualification and payment for excess footage.

Franki Foundation Company, as foundation specialists, also install pressure injected footings, tube piles and underpinning and conduct soil investigations.

Consult Franki on your foundation problems

FRANKI
FOUNDATION COMPANY

103 Park Avenue, New York 17, N. Y. • MUrray Hill 5-8916
114 South Warren Street, Syracuse 2, N. Y. • HArrison 2-0478
Statler Building, Boston 16, Mass. • HAncock 6-0010

Write or phone for literature on various Franki foundation methods.

This 4-place Beechcraft Bonanza, with a non-stop range of over 1,000 miles, cruises at 200 miles an hour, yet uses less fuel than your family car.

Looking for ways to boost profits?

Found: More Top Men

with this

"Go-Farther-Faster" Beechcraft

You have an important job to be done hundreds of miles away. It means profits for you. Who to send? The top man for that job, of course. But top men are busy men. That's why so many Beechcraft owners are using their planes more than ever before. In effect, it gives a company more top men.

How about a Beechcraft to help your profits? With a Beechcraft Bonanza "on alert", you can send the top man for any job farther, faster, more profitably.

As the Bonanza leaves the runway, the stout thrust of power tells him that here is an airplane second to none. Relaxed and comfortable in the Bonanza's quiet cabin, he can restfully study out the job ahead. He arrives fresh and ready—a top man in top condition.

Ask your Beechcraft distributor or dealer, this week, to tell you about the low cost of putting a "go-farther-faster" Beechcraft to work in your business to help you earn extra profits.

For information about the **Bonanza** and the finest leasing and financing plans in aviation, see your Beechcraft distributor or dealer, or write Beech Aircraft Corporation, Wichita 1, Kansas, U. S. A.

Beechcraft

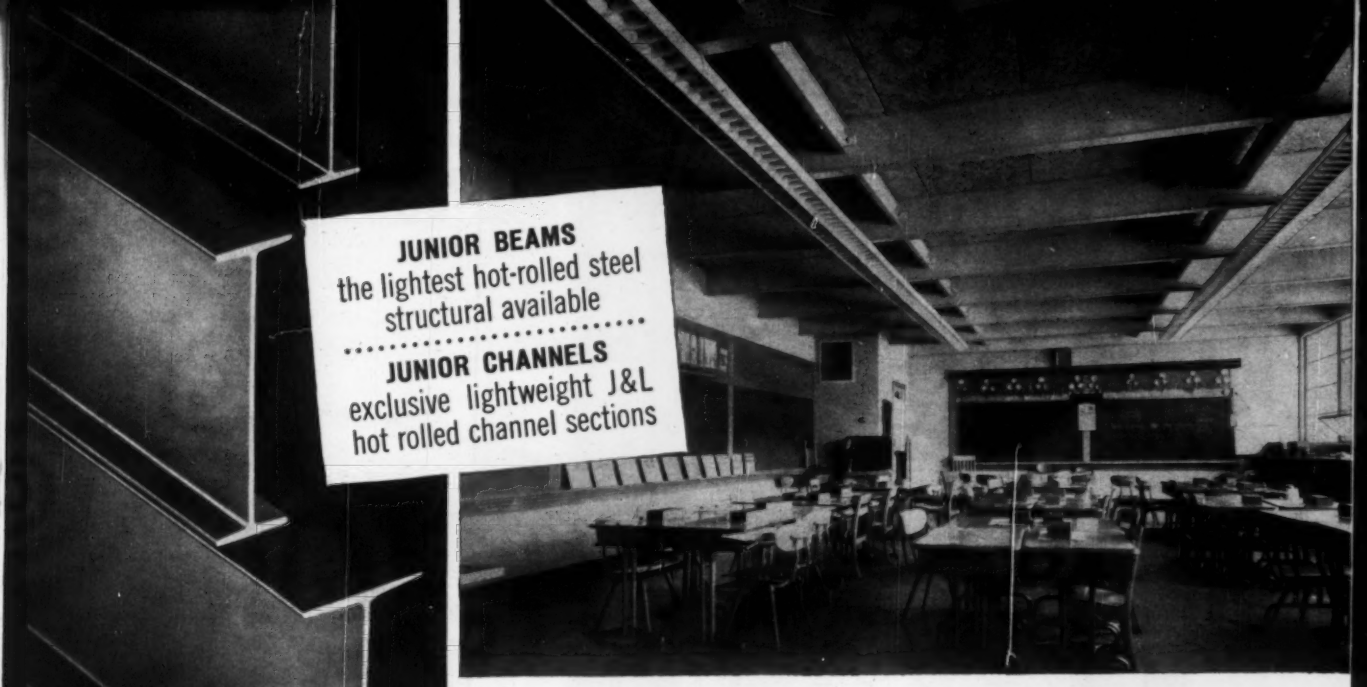
SUPER 18 TWIN-BONANZA BONANZA TRAVEL AIR

BEECHCRAFTS ARE THE AIR FLEET OF AMERICAN BUSINESS

. . . Canadian Rental Rates

Key to columns used in calculation: % of Replacement Value
- (A) Depreciation & obsolescence
- (B) Overhaul; major repairs; painting
- (C) General overhead & profit
- (D) Total of (A), (B) & (C)
- (E) Average use in months per year
- (F) Monthly rental rate as % of replacement value

Type of Machine	(A) %	(B) %	(C) %	(D) %	(E)	(F) %
ROLLERS						
Compactor, rubber tired, tow, 20-100t	12	20	20	52	6	8.7
2- & 3-wheel tandem,	12	10	20	42	6	7.0
Tamping, rub tire, straight or wobble*type						
9 whl-5 ft path to 15 whl-9 ft	12	20	20	52	6	8.7
Tamping rub tire, self-propelled	16	13	20	49	6	8.2
Tamping sheepsft, oscill, sgl-trpl dr.	14	10	20	44	6	7.3
Trench or shoulder, self-prop	12	10	20	42	6	7.0
Vibrating	16	12	20	48	6	8.0
SAW, Concrete gas, no blade	16	10	20	46	6	7.7
Masonry, no blade, electric	25	10	20	55	7	7.9
gas	25	15	20	60	6	10.0
Radial arm, no blade, elec 1½-3 hp	20	20	20	60	8	7.5
5-7½ hp	16	15	20	51	8	6.4
SCAFFOLDING, TUBULAR						
Castors, 6", 5"-8" diam	33	15	20	68	7	9.7
End frames, incl bracing, to 5'x7'	20	12	20	52	8	6.5
Platform extension brackets	33	15	20	68	6	11.3
SCALE, PLATFORM	12	10	20	42	6	7.0
SCARIFIER,						
Grader & Roller attachment	16	12	20	48	7	8.9
Tractor attachment	16	12	20	48	6	8.0
SCRAPER, Self-ld, w/o power unit						
Rubber tired, 7-30 cy heap mass	16	15	20	51	7	7.3
SCREED, Vibrating gas, 5-25 ft	25	15	20	60	7	8.6
SHORE, FORM, floor, adjustable	20	20	20	60	8	7.5
SNOWBLOWER,						
Diesel incl truck	12	12	20	44	5	8.8
Tractor attachment	14	12	20	46	5	9.2
SPREADING MACHINES						
Base paver, self-propelled gas	20	20	20	60	6	10.0
Concrete, w/vibrator attach, 10-25 ft	25	12	20	57	6	9.5
Sand or Stone, tow, push or self prop	16	8	20	44	6	7.3
STUD DRIVER, powder actuated	33	15	20	68	7	9.7
SURFACER, CONCRETE,						
elec, no abras whl	33	18	20	71	8	8.9
gas, no abras whl	33	22	20	75	8	9.4
TAMPER, EARTH, pan type, elec or gas	25	15	20	60	6	10.0
TOWERS & ACCESSORIES						
Tower, steel, portable, complete tubular, w/o cable, boom or hoist up to max live load 5000 lb	16	12	20	48	9	5.3
	12	12	20	44	9	4.9
Bucket, concrete, to 35 cf	20	15	20	55	8	6.9
Cages, material, steel	16	15	20	51	9	5.7
TRACTOR PIPELAYER,	20	16	20	56	7	8.0
TRACTOR SHOVEL, complete						
Crawler to 4 cy	22	22	20	64	8	8.0
Rubber tired to 6 cy	20	20	20	60	8	7.5
TRACTORS & ATTACHMENTS						
Crawler, diesel, gear ort.c. drive 25-80 drawbar hp	22	22	20	64	8	8.0
81 & over drawbar hp	18	18	20	56	7	8.0
Rubber tired, diesel	18	18	20	56	7	8.0
Bulldozer, straight or angle	18	18	20	56	7	8.0
Power control cable or hydraul	18	18	20	56	7	8.0
Comb. crane-hoe-dragline-shovel	20	20	20	60	6	10.0
Loader front or overhead	22	22	20	64	8	8.0
Pipelayer or side boom	20	16	20	56	7	8.0
Pusher, moveable, cable or hydraulic	20	16	20	56	7	8.0
Ripper, hydraulic	25	15	20	60	6	10.0
Rock rake	25	15	20	60	6	10.0
Winch, towing	16	13	20	49	7	7.0
Snow plow	20	10	20	50	5	10.0
TRAILER, Rubber tired	16	12	20	48	8	6.0
TRENCHER, ladder, vert boom or wheel	12	18	20	50	7	7.1
TRUCK, heavy duty,						
Diesel, dump 6-10 cy	20	12	20	52	9	5.8
11-30 cy	16	12	20	48	8	6.0
Gas, stake, to 5 tons	25	12	20	57	10	5.7
dump, to 5 tons	25	15	20	60	9	6.7
pickup, ½-¾ ton	50	12	20	82	10	8.2
1 ton						
TRUCK-TRACTOR w/5th whl & trailer	20	12	20	52	9	5.8
VIBRATOR, CONCRETE, elec to 3hp	33	25	20	78	7	11.1
gas, 3-6 hp w/21' shaft	33	30	20	83	7	11.9
pneumatic, flexible	33	25	20	78	6	13.0
rigid	33	13	20	66	6	11.0
WAGON						
Crawler, side, rear or bottom dump	20	20	20	60	6	10.0
Rubber tired, bottom dump	16	15	20	51	7	7.3
side or rear dump	20	16	20	56	8	7.0
Sprinkler or Tank	12	8	20	40	6	6.7
WELDING EQUIPMENT,						
Oxy-acetylene	33	20	20	73	8	9.1
Welding machine only, no acces						
A.C. arc, transformer type	16	10	20	46	8	5.8
D.C. arc, electric driven	14	12	20	46	8	5.8
diesel driven	16	12	20	48	8	6.0
WHEELBARROW, rub tire,	50	20	20	90	8	11.3



JUNIOR BEAMS
the lightest hot-rolled steel structural available

JUNIOR CHANNELS
exclusive lightweight J&L hot rolled channel sections

Architect: Hill and Wupper, Inc. • Fabricator: Geiger & Peters, Inc.
Contractor: Cannon Construction, Inc.

"LET THE STEEL SHOW"

Indiana school illustrates functional beauty and practicability of exposed JUNIOR BEAMS

"School board members like the functional use of exposed Junior Beams in this Warren Township Elementary school," reports Hill & Wupper, Inc., AIA, Architects and Engineers, Indianapolis.

This trend to exposed steel construction is finding wide application across the country in schools, residences, shopping centers and other light occupancy structures. Versatile JUNIOR BEAMS can be adapted to a wide range of architectural designs.

JUNIOR BEAMS are economical to use. They reduce steel tonnage required and they cut labor costs because they are easily fabricated, raised and positioned.

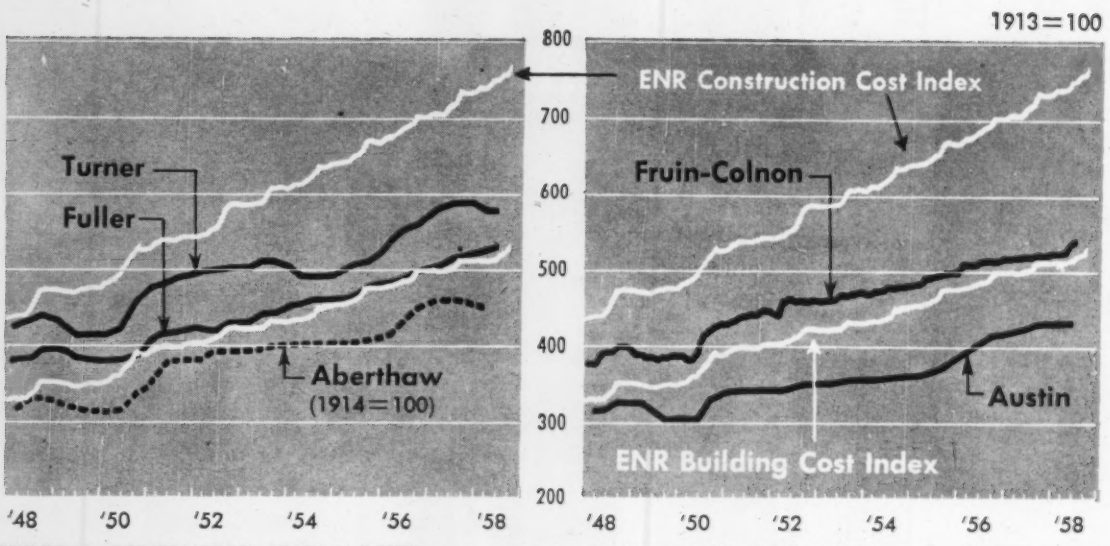
Get complete data on these and other J&L lightweight structurals. Call your local warehouse or write Jones & Laughlin Steel Corporation, 3 Gateway Center, Pittsburgh 30, Pennsylvania.

35 tons of 12" JUNIOR BEAMS were used in this Warren Township Elementary School, Indianapolis, Ind. The exposed beams were covered with 3" Tectum insulation, which was topped with roofing. Modular design has windows and columns on 4' centers.

J&L STEEL

Jones & Laughlin Steel Corporation

PITTSBURGH, PENNSYLVANIA



BUILDING CONTRACTOR PRICE INDEXES show mixed trends during the first half of 1958. Two indexes are down, but three are still rising because of increases in basic costs.

Building Prices Face New Push

Building contractors will find it harder to hold down advances in their selling prices in the months ahead. Reason: A stronger cost push is under way.

This cost push is coming from two directions. In addition to wage increases, which were the major cost escalator earlier this year, materials price increases are adding to the upward pressure.

The effect of this upswing in materials prices, led by steel and lumber, is evident in the ENR Cost Indexes. Since June, these materials caused a 10 point rise in the ENR Building Cost Index. This accounts for most of the 13.8 point total rise in the Index between June and September. And in the case of ENR's Construction Cost Index, steel and lumber increases account for well over half of the overall 16.2 point rise during June-September.

The effects of the new two-pronged cost push are only partly shown by the contractor prices available at this date. Most of them carry up to July—before steel prices rose and before the rash of lumber price advances took place. But two weighted cost indexes which include contractor overhead and profit (Boeckh and Smith Hinchman & Grylls) rose slightly in August.

However, by mid-year it was obvious that the substantial 1958 wage increases were making it harder for contractors to trim prices further and, in fact, were forcing some to mark up prices. Now, rising materials prices will make it that much tougher to avoid increased prices of finished construction.

Though contractor selling prices are firming up, the rate of increase during the rest of '58 should be less than in the last three years. This is because the rise in costs is smaller than in '55, '56 or '57 and because competition among contractors will probably keep the spread between prices and costs as wide as it was at mid-1958.

For the historical record and full description of these building cost indexes see ENR's first quarterly construction cost and estimating guide, ENR March 20, p. 38.

ENR Cost Indexes for 20 US and 2 Canadian cities are computed weekly and published in CONSTRUCTION DAILY. These indexes are updated with official monthly values on the Scoreboard page.

Building Cost & Price Indexes

	Weighted Cost Indexes								Contractor Selling Price Indexes			
Year to Month	ENR Construction	ENR Building	American Appraisal Company	Assoc. Gen'l Contractors	Marshall & Stevens	E. H. Boeckh: Comm'l & Factory Bldg **	Smith Hinchman & Grylls #	Handy-Whitman: Rein Conc Pacific 1911–14=100	Austin #	Fruin-Colnon	Fuller	Turner †
1913	100	100	100	100	100	100	100	....	100	100	100	100
1926	208	185	217	197	185	181	185	190J	185	218	202	195
1932	157	141	155	171	130	144	128	148J	117	178	157	136
1939	236	197	200	188	183	191	199	192J	152	208	195	182
1948	346	262	322	257	288	275	319	294J	273	285	290	318
1949	477	352	490	342	365	369	395	415J	307	382	382	413
1956	692	491	635	462	503	488	544	588J	400	503	482	544
1957 av.	**724**	**509**	**663**	**483**	**515**	**507**	**568**	**644J**	**420**	**512**	**504**	**578**
Sep.	738	516	670	490	522	513	572	....	424	514	....	....
Oct.	737	517	672	490	....	512	574	....	....	514	513	580
Nov.	737	517	672	491	....	512	572	....	....	514	....	....
Dec.	738	517	672	490	523.5	512	572	....	426	514	....	....
1958:												
Jan.	743	517	673	493	....	513	574	644	....	517	519	580
Feb.	744	516	673	493	....	512	572	....	....	517	....	....
Mar.	744	516	674	493	524	511	570	....	426	517	....	....
Apr.	746	517	675	494	....	512	572	....	....	518	521	573
May.	752	518	677	498	....	513	564	....	....	531	....	....
Jun.	757	521	680	498	523	517	561	....	427	531	....	....
Jul.	763	524	683	502	....	519	561	655	....	....	....	573
Aug.	764	526	....	503	....	520	562	....	....	....	....	....
Sep.	773	535	....	....	....	....	....	....	....	....	....	....

** Index reported on 1926–29 base # Index reported on 1926=100 base † Index reported on 1939=100 base J July value

ENR Indexes for 22 Cities

Construction Cost Index, 1913=100

City	June '49	June '55	June '56	1957 Jun	1957 Sep	1957 Dec	1958 Mar	1958 Jun	1958 Sep
Atlanta	345	472	502	523	550	548	558	558	584
Baltimore	425	575	595	643	670	670	672	701	708
Birmingham	389	511	549	556	563	593	593	593	599
Boston	526	696	744	746	773	765	764	793	809
Chicago	526	741	788	831	838	836	835	838	857
Cincinnati	487	664	680	713	751	748	745	746	780
Cleveland	514	762	809	856	861	859	847	849	874
Dallas	398	488	509	525	547	547	547	553	573
Denver	482	637	670	702	710	710	725	725	731
Detroit	489	763	800	823	832	831	852	852	889
Kansas City	501	685	709	735	742	742	742	762	768
Los Angeles	478	672	733	731	778	778	773	814	822
Minneapolis	504	711	747	781	788	788	803	818	825
New Orleans	379	535	564	572	581	591	588	591	602
New York	534	750	819	852	890	888	910	912	953
Philadelphia	492	711	737	780	776	775	775	795	803
Pittsburgh	492	669	688	762	791	788	804	819	827
St. Louis	508	720	756	789	796	796	814	840	849
San Francisco	478	676	726	758	763	761	758	798	820
Seattle	530	681	720	749	756	747	785	789	799
Montreal	408	525	560	586	587	591	584	603	603
Toronto		543	562	611	608	609	607	605	616
U. S. Average	474	656	692	721	738	738	744	757	773

Building Cost Index, 1913=100

City	June '49	June '55	June '56	1957 Jun	1957 Sep	1957 Dec	1958 Mar	1958 Jun	1958 Sep
Atlanta	308	399	424	442	458	456	456	461	472
Baltimore	349	452	491	503	518	520	523	527	534
Birmingham	329	423	447	457	468	476	477	480	488
Boston	362	471	503	518	531	523	522	528	547
Chicago	349	477	500	511	530	528	527	535	560
Cincinnati	356	456	475	489	507	504	501	502	519
Cleveland	332	477	508	522	527	524	512	515	527
Dallas	322	406	424	439	451	451	451	459	469
Denver	351	474	488	510	522	522	524	525	530
Detroit	336	490	514	535	545	545	545	545	573
Kansas City	357	477	497	503	516	516	517	527	533
Los Angeles	339	457	491	496	508	513	507	514	527
Minneapolis	361	493	515	530	537	537	537	547	554
New Orleans	325	439	457	467	477	481	478	477	485
New York	398	533	556	578	590	591	593	601	622
Philadelphia	394	523	538	560	562	561	561	569	581
Pittsburgh	375	489	500	541	566	568	569	573	593
St. Louis	375	495	522	538	546	546	552	558	567
San Francisco	341	447	476	486	497	506	503	507	533
Seattle	328	418	444	456	467	458	466	470	484
Montreal	316	405	437	451	452	453	446	449	449
Toronto		449	450	469	468	471	470	468	469
U. S. Average	349	465	489	504	518	516	516	521	535

Converting ENR Indexes* To Other Base Years

To convert from base 1913=100 to base below	Divide 1913=100 values of Construction Cost Index by...	Building Cost Index by...
1949=100	4.7702	3.5179
1947-49=100	4.5033	3.3642
1940=100	2.4196	2.0281
1939=100	2.3551	1.9744
1926=100	2.0803	1.8499
1925-29=100	2.0695	1.8648
1926-29=100	2.0702	1.8747
1929=100	0.0702	1.9086
1910-14=100	0.9380	0.9477
1924=100	2.1536	1.8578
1923-25=100	2.1204	1.8481
1914=100	0.8856	0.9191
1911=100	0.9343	0.9414

*Applies to 20-cities index, not to individual cities

Monthly Index History

Historical record of ENR cost indexes, graphs and tables is in the supplement to Engineering News-Record, October 17, 1957 by Business News Department, Engineering News-Record, P. O. Box 89, Times Square Station, New York 36, N. Y. Reprints are available at $1.00 each.

Public Utility Cost Indexes

Whitman, Requardt & Associates, Baltimore, Md.

Individual series for 103 cost elements reported semi-annually. Weighting is based on wide experience in cost analysis of plants and construction. Materials prices are from ENR, Iron Age and manufacturers; Labor rates from BLS, unions and builders associations.

Building (1911-14 = 100)

(Complete Index reports 14 Items entering into Building Construction Costs.)
A relates to Reinforced Concrete Bldg.; B relates to Brick Bldg.

	Jul '26	Jul '32	Jul '39	Jul '42	Jul '45	Jul '49	Jul '55	Jul '56	Jan '57	Jul '57	Jan '58	Jul '58
North Atlantic Division												
A	213	159	207	253	260	433	547	609	656	676	679	688
B	229	173	214	250	265	421	527	572	599	616	622	633
South Atlantic Division												
A	215	164	205	267	275	453	587	649	695	712	717	721
B	228	176	211	262	277	431	551	598	625	639	645	653
North Central Division												
A	201	154	200	242	253	418	542	603	642	663	664	673
B	211	164	203	234	250	390	513	554	579	597	600	612
South Central Division												
A	191	144	187	236	243	412	515	573	617	630	634	641
B	204	154	191	227	238	382	486	535	567	578	584	594
Plateau Division												
A	197	149	194	235	239	397	506	563	610	625	627	636
B	210	163	200	227	233	395	492	532	558	573	564	549
Pacific Division												
A	190	148	192	241	248	415	529	588	624	644	644	655
B	197	156	193	231	242	385	498	539	561	578	581	596

Gas Plant (1911 = 100)

(Complete Index reports 25 Items entering into Gas Plant Construction Costs.)
A relates to Total Constr. & Equip.; B relates to Mech. Equip. Exclusive of Gas Holders.

	Jul '26	Jul '32	Jul '39	Jul '42	Jul '45	Jul '49	Jul '55	Jul '56	Jan '57	Jul '57	Jan '58	Jul '58
North Atlantic Division												
A	230	188	249	275	288	464	605	672	695	717	734	745
B	212	195	278	299	301	481	615	715	772	799	816	823
South Atlantic Division												
A	222	175	230	268	282	453	591	651	678	693	714	721
B	212	195	278	299	301	482	615	715	772	799	816	823
North Central Division												
A	218	178	232	254	269	434	572	630	648	672	684	694
B	212	195	278	299	301	481	615	715	772	799	816	823
South Central Division												
A	200	160	217	249	261	419	538	595	614	632	648	655
B	212	195	278	299	301	487	615	715	772	799	816	823
Plateau Division												
A	202	166	217	237	243	398	517	575	595	612	623	630
B	212	195	278	299	301	481	615	715	772	799	816	823
Pacific Division												
A	206	177	228	257	266	428	561	620	638	661	673	688
B	212	195	278	299	301	481	615	715	772	799	816	823

Electric Light & Power (1911 = 100)

(Complete Index reports 64 Items entering into Electric Light and Power Construction Costs.)
A relates to Total Constr. & Equip. All steam; B to Accessory Electric Equipment; C to Sub-Sta. Equip.

	Jul '26	Jul '32	Jul '39	Jul '42	Jul '45	Jul '49	Jul '55	Jul '56	Jan '57	Jul '57	Jan '58	Jul '58
North Atlantic Division												
A	194	176	225	248	259	400	524	577	599	610	620	627
B	196	186	224	239	237	341	468	490	520	519	536	543
C	178	168	203	216	218	312	400	444	457	464	477	484
South Atlantic Division												
A	201	180	233	267	273	422	559	616	641	651	662	667
B	203	191	240	262	248	356	494	512	542	546	562	564
C	183	173	218	237	228	325	425	466	479	491	502	506
North Central Division												
A	187	174	218	238	243	374	504	555	575	587	595	601
B	188	186	223	231	218	307	432	451	477	478	492	497
C	171	169	202	209	200	280	369	409	419	427	438	444
South Central Division												
A	183	171	218	246	251	390	515	567	591	601	611	617
B	189	190	230	248	235	340	470	488	517	517	533	539
C	171	173	209	226	217	311	398	438	450	457	470	476
Plateau Division												
A	188	171	219	236	241	378	500	553	578	594	601	604
B	196	188	232	236	225	323	446	457	482	494	508	509
C	177	171	211	212	207	294	381	413	422	442	451	453
Pacific Division												
A	178	163	215	242	244	380	503	557	578	590	600	608
B	177	170	222	240	225	323	447	471	496	495	517	520
C	161	155	202	219	208	297	390	435	444	451	469	473

Ashes, coal and other substances under foot often make solid floors in boiler rooms unsafe.

Such hazardous materials cannot accumulate on a floor made of Irving open steel grating. Debris falls right through, making floors always clean. Dangerous fumes can escape through open grating. Floors made of Irving Grating are clean, safe at all times . . . no ankle turning, tripping, slipping, hot foots. It is fireproof, self-ventilating.

Manufacturers of Riveted, Pressure-Locked, and Welded Gratings of Steel, Aluminum and other metals.

"A FITTING GRATING FOR EVERY PURPOSE"

IRVICO

IRVING SUBWAY GRATING CO., Inc.
Originators of the Grating Industry

Offices and Plants at
5063 27th St., LONG ISLAND CITY 1, N. Y.
5063 10th St., OAKLAND 23, CALIFORNIA

From Liberty Mutual: a forward-looking concept of workmen's compensation coverage which provides

Protection in

—the real key to lower insurance

The real cost of your compensation protection is not the first price, but the final cost

Any insurance company or agent can quote you a price on business insurance for your people and your assets. Yet the ultimate cost of your coverage is, in a very real sense, determined by you. If you have an unfortunate number of accidents and suffer large losses over a period of time, you are actually contributing to a higher insurance rate for yourself. Anything you can do *now* to cut down on accidents and losses will help toward cutting your premium costs *in the future*.

This is why Liberty Mutual – the company with the largest experience in workmen's compensation service – has developed over the years a forward-looking concept of business insurance which gives you protection in depth. From the start of your Liberty coverage, a wide range of skills and resources can be put to work to help you anticipate and avoid accidents and loss, lessen their impact if they happen and keep future costs down.

In today's business climate, *PROTECTION IN DEPTH* can be more important to you than ever

Today every contractor – whether he employs 5 people or 500 – must take a new and careful look at expenses. The protection in depth you get from Liberty can help you trim excess dollars from your insurance costs without sacrificing any of the coverage you need to safeguard your business.

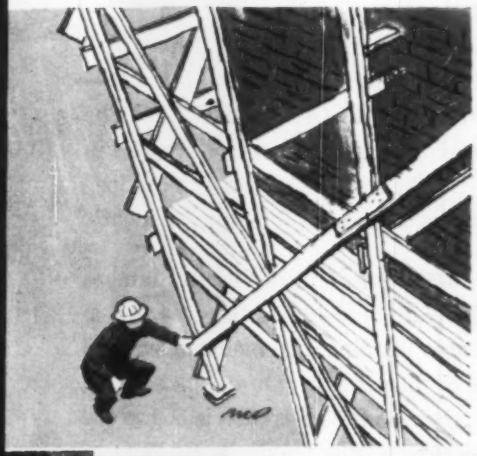
This kind of protection has enabled Liberty Mutual to set an impressive cost-cutting record. In turn, this has meant steady growth in business written and a large share of "blue-chip" accounts. Because we deal directly, our salesmen have at hand the experience of the entire company to draw on, and they are expected to have the skill to see that it is applied to the problems of any policyholder, large or small. This direct-dealing, mutual form of operation not only helps policyholders control loss, but is also one reason why over the years Liberty has been able to return more than $455 million in dividends to policyholders.

We believe that protection in depth can today lead to significant improvement in your insurance cost picture. We invite you to become acquainted with protection in depth now.

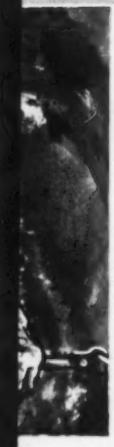
depth

costs today

Power under control. To protect buildings from damage from blasting, Liberty engineers developed an instrument which measures ground vibrations, tells exactly how much dynamite can safely be used in a specific locale. Result: fewer accidents, safer working conditions.



Finding trouble before it happens. A Liberty construction engineer checks the scaffolding on a job to make sure it's strong – and safe. Result for policyholders: fewer lost-time accidents, lower insurance costs in the future.



Test for tiredness. At Liberty's research center, a "worker" goes through his paces so that our scientists can learn to measure human effort and fatigue. Goal: new knowledge of when worker efficiency begins to fall off, cause accidents.

Behind *PROTECTION IN DEPTH* is the broad range of Liberty's special skills and resources

The services available to Liberty Mutual policyholders are often broader in scope than most other companies or agencies can offer. Many are routine and offered as a standard part of Liberty's work. A few are Liberty exclusives. All are ready for "trouble shooting" – to crack dangerous or money-wasting problems that any policyholder may have. Some of these include:

A full-time staff of construction engineers to study jobs before work begins, provide safety recommendations and help solve problems in such fields as materials handling, falsework design, soil testing and structural safety.

Two rehabilitation centers to rebuild the self-respect of seriously injured workers and to speed their return to work.

These Liberty "extras," and the others shown on this page, all work to give you the best possible protection in depth. They are all available to any policyholder – large or small – who needs them. All of them can work with you to lower insurance costs.

Look for more from

LIBERTY MUTUAL

...the company that stands by you

LIBERTY MUTUAL INSURANCE CO. • LIBERTY MUTUAL FIRE INSURANCE CO. • Home Office: Boston
Insurance for: Automobiles, Liability, Group Accident and Health, Fire, Workmen's Compensation, Marine, Crime

WHEN YOU NEED HIGH DEGREE SOIL COMPACTION

BARCO is the ANSWER!

THE KEY TO BETTER CONSTRUCTION—No recent trend in construction has had a more phenomenal growth than the specification of HIGH DEGREE SOIL COMPACTION for all kinds of projects—Atomic Energy, Hydroelectric Power and Flood Control Dams, Highways, Toll Roads and Freeways, Airports, Bridges, Buildings, and Housing Developments!

EASILY MEETS RIGID SPECIFICATIONS—In test after test, Barco Rammers have demonstrated their ability to deliver 95% to 97.5% compaction (modified Proctor Method)—EASILY! EFFICIENTLY! ECONOMICALLY! The Barco Rammer is especially useful for compacting fill in restricted areas. ONLY the Barco Rammer can produce specified high degree compaction on lifts up to 20 inches.

GETS JOBS FINISHED ON TIME—One of the biggest advantages offered by Barco Rammers is ability to handle work in minimum time. On area tamping, one man can average 20 to 30 cubic yards of fill per hour. On trench backfill, using lifts up to 24", the rate for 18" trench is 360 to 600 feet per hour. *When time is at a premium,* BARCO IS THE ANSWER—find out about it NOW!

For Soil Compaction Close to Walls, Culverts and Abutments —in Trenches, Ditches

BARCO *GASOLINE* RAMMER

BARCO MANUFACTURING CO.
514K Hough St., Barrington, Illinois

Gentlemen:
YES! I want to know about Barco Rammers for Soil Compaction:

Name _____

Company _____

Address _____

PRODUCTS BACKED BY EXPERIENCE
BARCO
ANNIVERSARY
1908 50TH 1958

Competition Trims School Costs

Capital budgets for school construction will net some handsome savings this year as keen competition among contractors pulls bid prices down.

Contract prices for elementary K-6 schools in New York State show the trend turning down in the first quarter of '58. A median cost of $18.08 per sq ft for six schools analyzed by the Division of School Buildings and Grounds, State Education Department, is $1.00 below the fourth quarter '57 median of $19.10 per sq ft. Moreover, the range of these costs in the first quarter was also down.

New York City also is experiencing a reversal of the 1955-57 uptrend in contract costs of new schools. Though no cost per cu ft figures are available yet for 1958, a comparison of bid prices with estimates reveals large savings.

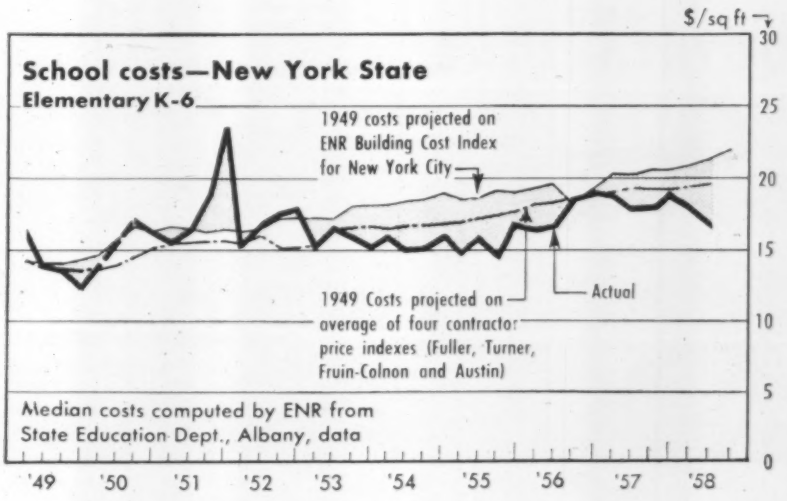
At the bid openings for 13 new schools during the period from January 28 through August 13, all low bids were below estimates. In fact, total low bids on 10 schools were 10% to 20% under the estimate as this table shows:

Bid Opening Date	Total Bids* (in thousands)	Estimate	% Below Estimate
Jan. 28	$2,307.1	$2,429.6	−5.0
Feb. 28	6,153.3	6,894.0	−10.8
Mar. 26	5,623.3	6,583.5	−14.6
Apr. 8	2,242.2	2,513.3	−10.8
Apr. 15	2,153.7	2,528.0	−14.8
May 2	1,944.4	2,230.0	−12.8
May 27	2,933.5	3,287.8	−10.8
May 29	2,016.8	2,421.4	−16.7
June 25	2,032.8	2,272.4	−10.6
July 17	1,910.8	2,408.8	−20.7
July 22	1,972.4	2,192.4	−10.0
July 31	2,142.5	2,299.5	−6.8
Aug. 13	2,415.3	2,443.8	−1.2

* Without fuel.

However, New York City's bonanza may be exhausted. Low bids were close to estimates in late July and August.

The trend in contractors' costs is bringing steady upward pressure on bid prices (see chart). This means the 1958 turndown in school bid prices will be temporary.



School Costs Per Square Foot in New York State

State Education Department, Division of School Buildings and Grounds

	No. of Schools K-6 Total	Elementary, K-6 Dollars per sq ft for schools with . . . One Large Unit* Min	Med	Max	Two Large Units* Min	Med	Max	Three Large Units* Min	Med	Max	No. of Schools 7-12 Total	Secondary, 7-12 Dollars per sq ft Min	Med	Max
1949	29	$10.40	$14.00	$19.20	$12.00	$14.60	$18.70				4	$13.20	$13.55	$16.20
1955	52	11.75	16.40	23.60	11.90	15.70	20.25	$14.90	$14.90	$15.90	13	12.55	17.10	18.50
1956	53	12.90	17.85	23.80	13.25	17.65	21.10	16.50	16.80	17.10	7	15.40	18.15	20.90
1957	50	14.65	19.28	25.20	12.90	18.10	21.75	.....	18.70	.....	10	16.40	18.61	20.60
'55, Q1	17	13.60	16.40	17.35	12.70	14.53	15.90	.....	14.90	.....	4	12.55	15.15	17.50
Q2	17	11.75	15.83	19.90	11.90	15.70	17.20	.....	.....	.....	3	15.60	17.20	17.30
Q3	8	17.50	19.25	19.90	15.90	16.90	20.25	.....	.....	.....	4	15.30	16.40	18.50
Q4	12	15.50	16.95	23.60	.....	.....	.....	.....	15.90	.....	2	18.25	18.33	18.40
'56, Q1	11	14.95	15.10	18.40	14.45	16.80	18.50	.....	.....	.....	2	16.75	18.33	20.90
Q2	18	14.40	16.50	18.55	14.60	18.00	19.00	.....	17.10	.....	2	15.80	16.98	18.15
Q3	9	12.90	19.10	21.60	14.15	18.50	21.10	.....	16.50	.....	2	15.40	17.25	19.10
Q4	15	16.00	20.70	23.80	13.25	18.85	21.00	.....	.....	.....	1	.....	18.60	.....
'57, Q1	11	17.80	18.58	19.35	15.70	19.23	21.75	.....	18.20	.....	1	.....	18.51	.....
Q2	14	14.65	19.60	25.20	12.90	18.10	19.00	.....	.....	.....	5	18.70	19.35	20.00
Q3	11	18.60	19.15	19.40	14.40	17.78	18.40	.....	.....	.....	3	18.40	19.50	20.60
Q4	14	16.95	20.80	25.20	17.60	19.00	19.60	.....	.....	.....	1	.....	18.90	.....
'58, Q1	6	18.20	18.30	18.45	16.60	17.00	17.95	.....	.....	.....	1	.....	16.60	.....
Q2	1	.....	16.90	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

* Large Unit includes a general purpose room, gymnasium, auditorium, multi-purpose or other group activity room. These are costs based on the four contracts—general construction, plumbing, electrical, heating and ventilating. They include built-in features, but no movable furniture or equipment. Some minor site improvement may be included, but no major site work and no land costs.

Unit Prices of Schools Built in New York City—by Years

Bureau of Design and Construction, Board of Education, City of New York

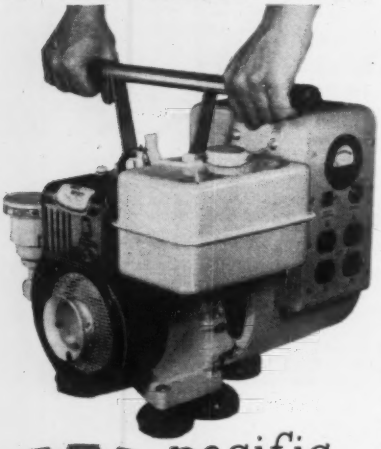
Elementary Schools

	no.	per cu ft min	per cu ft aver	per cu ft max	per pupil sta min	per pupil sta aver	per pupil sta max	capacity, pupil stas min	capacity, pupil stas aver	capacity, pupil stas max
1947	(9)	$1.16	$1.25	$1.56	$1,255	$1,517	$1,991	558	1,162	1,550
1948	(5)	1.20	1.30	1.43	1,399	1,581	1,784	806	1,094	1,433
1949	(12)	1.03	1.18	1.40	1,148	1,334	1,638	868	1,181	1,588
1950	(11)	1.04	1.20	1.55	957	1,357	1,612	302	1,036	1,581
1951	(24)	1.11	1.39	1.69	1,447	1,710	2,451	358	885	1,274
1952	(9)	1.23	1.40	1.72	1,391	1,518	1,689	494	989	1,310
1953	(6)	1.37	1.41	1.49	1,202	1,488	1,570	792	944	1,238
1954	(9)	1.14	1.33	2.01	1,216	1,354	1,580	302	1,073	1,292
1955	(10)	1.35	1.61	2.71	1,338	1,653	2,056	133	1,117	1,364
1956	(12)	1.52	1.69	1.97	1,467	1,811	2,361	842	1,244	1,631
1957	(7)	1.52	1.74	2.20	1,564	1,731	2,136	487	1,134	1,400

Junior High Schools

	no.	per cu ft min	per cu ft aver	per cu ft max	per pupil sta min	per pupil sta aver	per pupil sta max	capacity, pupil stas min	capacity, pupil stas aver	capacity, pupil stas max
1947	(2)	$1.21	$1.23	$1.25	$1,270	$1,277	$1,284	1,810	2,068	2,326
1948	(1)	1.32	1.32	1.32	1,623	1,623	1,623	1,518	1,518	1,518
1949	(3)	0.99	1.09	1.26	1,261	1,380	1,553	1,518	1,819	1,998
1950	(1)	1.07	1.07	1.07	1,210	1,210	1,210	2,012	2,012	2,012
1951	(5)	1.32	1.36	1.38	1,408	1,511	1,645	1,558	1,842	2,020
1952	(7)	1.10	1.22	1.31	1,187	1,342	1,451	1,732	1,813	2,056
1953	(7)	1.10	1.22	1.29	1,176	1,280	1,462	1,766	1,968	2,185
1954	(6)	1.10	1.23	1.30	1,237	1,322	1,517	1,694	1,969	2,136
1955	(11)	1.25	1.44	1.63	1,370	1,580	1,904	1,772	1,950	2,114
1956	(6)	1.49	1.64	2.02	1,580	1,711	1,895	1,784	1,959	2,166
1957	(4)	1.53	1.65	1.74	1,609	1,730	1,815	1,787	1,924	2,183

NEW and OUTSTANDING!



pacific mercury

Carryable—Portable—Stand-by Electric Plants

1 KW to 315 KW Capacity

Thoroughly job-tested, the new **Pacific Mercury** line offers generator sets for every need. Each has been designed to meet the requirements of contractors and embodies many features not found on sets of comparable cost.

Pacific Mercury Standard Features

- Built-in RPM meter
- Triple-dipped mildew and fungus-proofed windings
- Automatic spark advance
- Ball bearings
- Built-in carrying handles
- Extra plug-in receptacles
- Remote start stop receptacle
- Built-in electric starter
- Trickle charger
- 4-Cycle engines
- Guaranteed

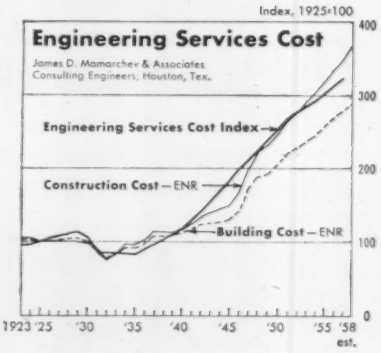
pacific mercury

14052 BURBANK BLVD., VAN NUYS, CALIF.

Company field engineers in principal areas
Manufacturers of the Thomas Electronic Organ

Jot down your name, address and company here and mail for complete catalog information and prices.

Third Quarterly Round up: ▶ **Engineering Costs**



The Engineering Services Cost Index measures the cost of an office and field engineering force of a selected average number of draftsmen, engineers, supervisors and clerical help to plan, design and supervise construction of industrial building of a specific size. Fringe benefits and overhead are included, but there is no allowance for profit. The 10 point rise in 1957 follows a similar rise in 1956, a 12 point rise in 1955 and 8 point increases in 1954 and 1953.

Cost data for this index are collected and averaged on a national basis.

Engineers' Staff Costs Increased 3% in 1957

The cost of manning an engineering office rose in 1957 for the 22nd consecutive year, as measured by the Engineering Services Cost Index computed by James D. Mamarchev and Associates, Consulting Engineers, Houston, Tex. It reached a record high in 1957 of 323, based on 1925 = 100. The ENR Building Cost Index is 278 for 1957 on a 1925 = 100 base.

Engineering Services Cost Index, 1925=100

James D. Mamarchev Associates, Houston, Texas

Yr.		Yr.		Yr.	
1923	96	1935	83	1946	198
'24	97			'47	211
'25	100	'36	90	'48	226
		'37	97	'49	239
'26	105	'38	103	'50	251
'27	108	'39	110		
'28	111	'40	117	'51	267
'29	113			'52	275
'30	106	'41	130	'53	283
		'42	143	'54	291
'31	87	'43	156	'55	303
'32	85	'44	169		
'33	85	'45	182	'56	313
'34	84			'57	323

Third Quarterly Round up: ▶ **Building Equipment Costs Dip**

The three-year uptrend in building equipment costs halted in June when costs turned down for the first time since 1954, according to the index of Marshall & Stevens Inc., of Illinois.

The June index of 233.3, based on 1926 = 100, eased 0.1% below March's record high. The June value was 9.2 points or 4.1% above the year ago index, but this rise was much less than in the two preceding 12 month periods: 16.1 points June '55-June '56 and 19.9 points June '56-June '57.

The Marshall & Stevens indexes of comparative equipment costs were developed to cover the composite of the entire industrial plant: machinery, mechanical installation, furniture and fixtures, hand tools, and other items. These are combined in proper proportion to their average occurrence in each plant and computed for 47 industries.

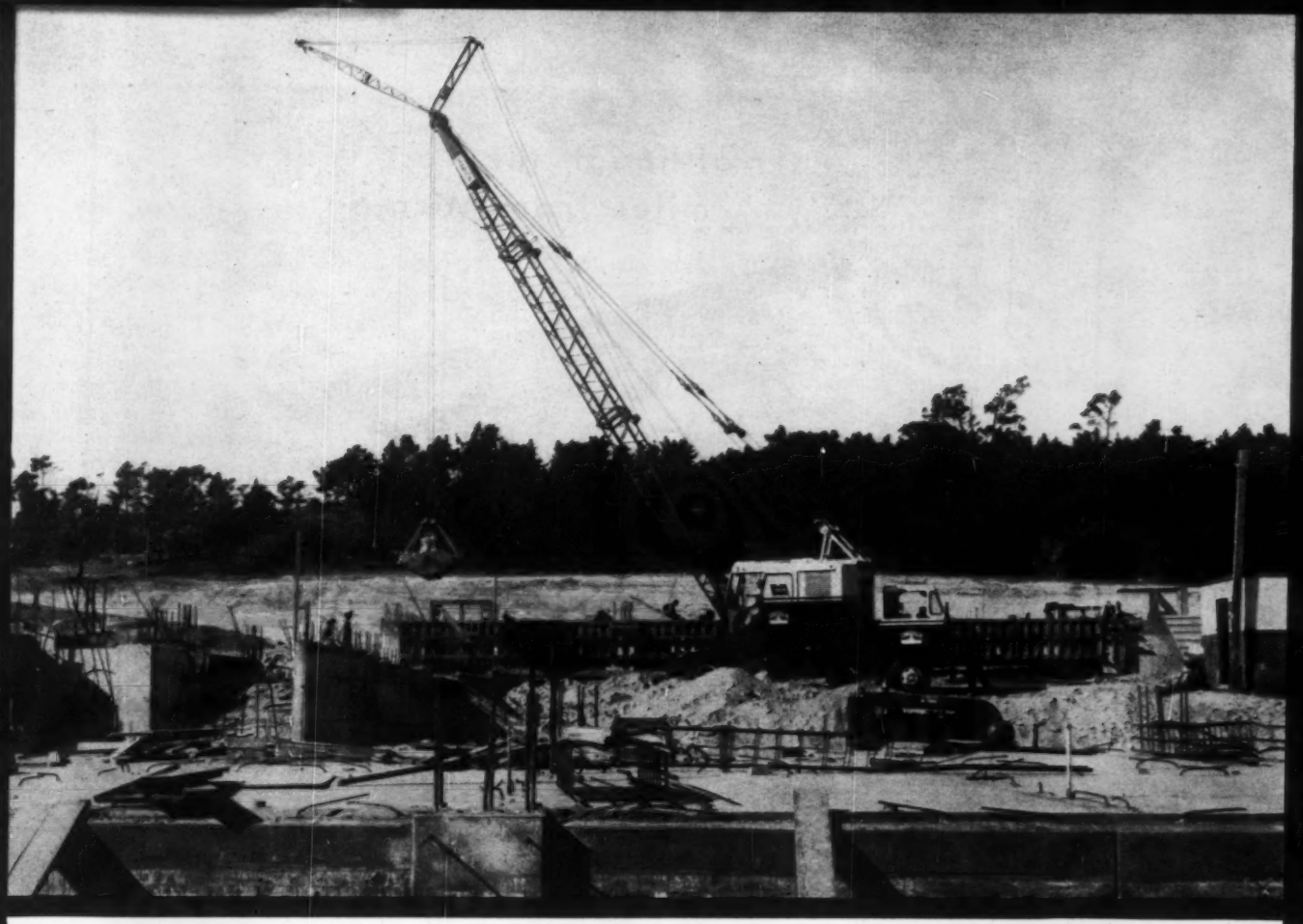
Eleven series are shown in the table, five of which are averages of three or more Marshall & Stevens related series.

Industrial Equipment Cost Indexes

Marshall & Stevens, Inc. of Chicago, Illinois, 1926 = 100

Industry	1913	1929	1932	1939	1945	1948	1949	1953	1954	1955	1956	1957	June 1957	June 1958
Average of All	57.9	91.9	66.1	84.8	103.4	123.2	161.2	182.6	184.6	190.6	208.8	225.1	224.1	233.3
Commercial (av. of 12*)	58.8	91.8	67.6	86.8	105.2	120.9	152.7	174.0	183.3	179.8	195.9	207.8	206.4	213.8
Transportation—garage	69.0	91.5	69.2	83.6	100.9	123.9	170.3	197.3	199.0	205.5	227.6	248.6	247.9	257.2
Public utility (av. of 2*)	59.1	91.8	70.1	82.9	97.5	119.5	159.7	178.9	181.7	186.8	204.0	221.1	220.2	226.3
Process (av. of 9*)	59.1	90.5	73.2	83.6	103.8	123.0	161.1	180.2	183.4	188.7	206.4	223.6	222.5	232.8
Food (av. of 10*)	57.8	92.6	68.5	84.9	104.1	126.1	169.2	192.3	194.8	200.7	220.8	239.4	238.4	246.1
Metal working	57.1	92.3	67.9	83.6	110.7	131.2	161.8	180.7	184.1	189.3	206.8	224.4	223.1	231.4
Aircraft		93.0	66.7	85.0	109.8	127.0	177.5	204.1	205.8	213.4	236.7	257.8	256.5	265.0
Mach & parts, elec eq	59.2	92.0	68.0	83.4	106.8	130.3	167.7	191.1	194.6	200.2	218.7	237.5	236.5	243.5
Textile	61.1	91.1	67.8	83.7	101.8	122.1	157.3	199.9	199.8	206.6	228.9	247.8	246.7	253.5
Woodworking	56.6	92.0	67.2	83.6	100.9	123.0	160.4	178.9	182.3	187.5	204.7	221.8	220.8	227.0
General (av. of 7*)	59.2	95.5	68.8	84.6	103.2	122.0	161.8	182.5	185.0	190.7	209.4	226.5	225.7	231.8
Cold storage—refrig	59.3	92.0	70.0	82.1	101.7	125.7	175.8	203.1	204.8	211.6	234.3	254.2	253.0	260.7
Contractors' equipment	63.0	91.0	71.9	82.4	102.5	124.2	161.1	179.6	183.0	188.2	205.6	224.4	222.8	230.7

* In each of these groups, MARSHALL AND STEVENS reports separate comparative equipment cost trends for:
COMMERCIAL: Apartment, church, hotel, bank, library, restaurant, school, store, theatre, hospital, dwelling, office
GENERAL: Laundry, mining and milling, motion picture, printing, shipbuilding, warehouses, logging
PUBLIC UTILITY: Steam power, electric power
PROCESS: Distillery, cement, chemical, glass, petroleum industry, paint, paper, rubber, clay products
FOOD: Bakery, bottling, brewery, candy, cannery-fish-cannery-fruit, creamery, dairy (flour cereal feed), packing, fruit, packing-meat



80-FOOT ARM . . . 25-TON MUSCLES

"Versatility on wheels" describes this Marion 35-M Truck Crane, busy on a $1,600,000 building job in California. A one-yard clam bucket handled excavation and cleanup work. Then the 35-M placed much of the 7,000 yards of concrete involved, using a 60-foot boom and 20-foot jib for plenty of reach. Smooth, easy-to-operate Marionair Control, anti-friction bearings at important points including the swing rollers and easy maneuverability of the carrier helped it turn in another impressive profit-minded performance. See your Marion Distributor about the newest developments in fast, low-cost truck, wagon and crawler cranes.

You get **MORE** *with* **MARION**

TODAY'S MARIONS GIVE YOU MORE IN SUSTAINED, LOW-COST PERFORMANCE

MACHINE	Shovel Capacity	AVAILABLE AS . .			
		Hoe	Crawler Crane	Truck Crane	Special Crane
35-M	¾	Yes	Yes	Yes	—
43-M	1	Yes	Yes	Yes	—
362	1½	Yes	Yes	—	Yes
93-M	2½	Yes	Yes	—	Yes
101-M	3	—	Yes	—	—
111-M	4	—	Yes	—	—

MARION POWER SHOVEL CO. • MARION, OHIO

A Division of Universal Marion Corporation

Send me information about MARION ..... yard shovels, ... yard hoes and ..... ton cranes (☐ crawler mounted ☐ truck mounted).

☐ Have a salesman call.

Name ..... Title .....

Company .....

Street .....

City ..... Zone ..... State .....

says Mr. M. E. CUNNINGHAM, President
Cunningham-Limp Company, Designers, Engineers, Builders

INTERNATIONAL STEEL SERVICE
helps us keep our jobs on schedule!"

"Take this construction project for Manning, Maxwell & Moore, Inc., Shaw-Box Crane & Hoist Division in Muskegon, as an example . . . *We gave International a 60-day delivery deadline . . . tough enough in normal times — but we asked them for almost 2,000 tons of fabricated structural steel during a time of critical steel shortage. International engineers worked with us in designing the building around available steel to expedite completion.*

"In no time at all the project was rolling, and the tight construction schedule was met. As a matter of fact, in only eight weeks after the date of the order, the first structural shapes were on the way to the job site. No wonder we call on International Service whenever we can . . . wherever *we are building."*

For structural steel fabricated and supplied to match exact specifications . . . for capable planning to help on any project at any stage from start to finish . . . investigate the advantages to you of International Service.

Other CUNNINGHAM-LIMP construction projects on which International Steel has participated are:

Manning, Maxwell & Moore, Inc.
Muskegon, Michigan

Monroe-Randolph Parking, Inc.
Detroit, Michigan

Vickers, Inc,
Birmingham, Michigan

Shwayder Brothers, Inc.
Ecorse, Michigan

Massey-Ferguson (2 projects)
Detroit, Michigan

Ford Motor Company (4 projects)
Indianapolis, Indiana

Chrysler Corporation
Skokie, Illinois

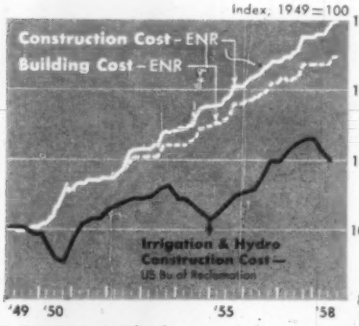
INTERNATIONAL STEEL COMPANY
1455 Edgar Street • Evansville 7, Indiana

INTERNATIONAL SERVICE

Third Quarterly Round up: ▶ **Heavy Construction Costs & Prices**

Irrigation and Hydro Cost Indexes

US Bu Reclamation, Denver Office
Indexes, 1949-51=1.0



Irrigation and hydro power construction costs are down to the lowest point since January 1957, according to the Denver Office, U. S. Bureau of Reclamation. The July '58 composite was 4.6% under the January 1958 record high.

Class of Construction	1940	1946	July 1949	1955	1956	1957 Jan.	1957 Apr.	1957 July	1957 Oct.	1958 Jan.	1958 Apr.	1958 Jul.
Composite index	0.47	0.78	1.04	1.11	1.19	1.24	1.27	1.29	1.30	1.30	1.26	1.24
Dams, earth	0.51	0.85	1.08	1.05	1.13	1.15	1.19	1.22	1.22	1.23	1.17	1.10
Dams, concrete	0.47	0.76	1.02	1.02	1.09	1.11	1.14	1.15	1.16	1.16	1.14	1.12
Pumping plants, bldg & equip.	0.48	0.73	1.00	1.26	1.37	1.43	1.45	1.46	1.46	1.46	1.41	1.42
struct, reinf conc, & improv.	0.44	0.70	1.00	1.22	1.28	1.31	1.32	1.34	1.35	1.36	1.30	1.32
equipment	0.55	0.78	0.97	1.30	1.45	1.56	1.58	1.58	1.58	1.58	1.59	1.60
pumps & prime equip	....	....	0.97	1.35	1.54	1.64	1.66	1.66	1.66	1.66	1.67	1.68
access elec & misc equip	....	....	0.97	1.20	1.30	1.41	1.43	1.44	1.44	1.44	1.44	1.45
steel penstocks & discharge pipes	....	0.69	0.96	1.36	1.53	1.66	1.68	1.72	1.72	1.72	1.66	1.63
Canals	0.47	0.78	1.07	1.05	1.13	1.18	1.20	1.21	1.21	1.19	1.12	1.13
Conduits, tunnels, free flow, conc lined	....	0.71	1.02	1.16	1.23	1.24	1.26	1.29	1.30	1.30	1.25	1.28
Laterals and drains	0.41	0.74	1.02	1.18	1.20	1.26	1.31	1.32	1.35	1.32	1.26	1.27
Primary roads	0.48	0.82	1.06	1.12	1.16	1.19	1.23	1.25	1.25	1.24	1.22	1.21
Secondary roads, unsurf	0.50	0.91	1.08	1.04	1.08	1.13	1.18	1.21	1.20	1.19	1.18	1.18
Bridges, steel	0.46	0.78	1.03	1.32	1.40	1.47	1.48	1.52	1.52	1.52	1.46	1.44
Power plants, hydro, bldg & equip	0.51	0.77	0.99	1.26	1.37	1.44	1.46	1.47	1.47	1.48	1.42	1.44
structs, reinf conc, imprv.	0.45	0.71	1.01	1.22	1.28	1.30	1.31	1.33	1.34	1.36	1.30	1.33
equipment	0.55	0.80	0.93	1.28	1.44	1.53	1.55	1.55	1.55	1.54	1.55	1.58
turbines & generators	0.56	0.83	0.94	1.31	1.46	1.57	1.58	1.58	1.58	1.58	1.59	1.60
access elec equip	0.54	0.72	0.98	1.24	1.34	1.44	1.46	1.48	1.48	1.48	1.48	1.49
misc equip	0.51	0.73	0.98	1.23	1.34	1.43	1.44	1.44	1.44	1.40	1.40	1.40
Concrete pipe lines	0.55	....	....	....	....	....	....	1.28	....	1.29	1.28	1.32
Transm switchyards & substa	0.54	0.70	0.94	1.38	1.47	1.59	1.60	1.60	1.61	1.60	1.58	1.56
Transm lines, wood pole 115kv	0.52	0.99	1.16	1.02	1.09	1.09	1.09	1.10	1.13	1.16	1.18	1.21
Transm lines, steel tower 230 kv	....	....	....	1.22	1.33	1.37	1.39	1.43	1.43	1.43	1.42	1.40
Permanent genl property, bldgs.	0.44	0.66	0.93	1.20	1.29	1.30	1.30	1.31	1.31	1.30	1.30	1.32

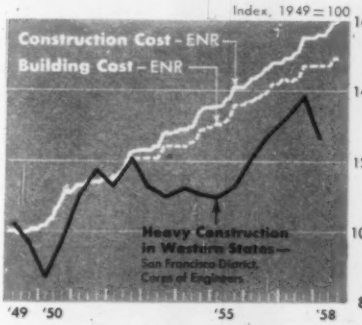
Based on combined costs of material and labor furnished by the contractor, and material and labor furnished by the government on US Bureau of Reclamation projects in 17 western states and Alaska

Western States Unit Price Index

Estimates Section, San Francisco District, Corps of Engineers, 1st Half 1946=100

		1946 1st half	1949 1st half	1952 1st half	1953 1st half	1954 1st half	1955 1st half	1955 2nd half	1956 1st half	1956 2nd half	1957 1st half	1957 2nd half	1958 1st half
Index, 1st Half '48=100		100.0	132.2	144.76	145.35	145.09	141.37	148.36	154.74	164.12	170.37	178.68*	163.07
Items used in index	Unit	Based on these average unit prices											
Cr rock base course	ton	2.81	2.29	2.60	2.80	2.96	3.03	2.90	3.48	3.56	3.41	3.49	3.65
Plant mix aggregate	ton	4.82	4.43	5.51	5.99	5.84	5.86	6.04	6.19	7.25	6.92	6.26	7.28
Plant mix asphalt	ton	22.00	26.85	24.34	24.00	21.46	25.00	19.63	21.74	22.18	21.50	24.00	25.19
Cover aggregate	ton	5.09	5.65	4.06	6.37	6.42	6.63	6.71	6.60	7.34	7.13	6.71*	7.02
Structural concrete	cy	50.65	65.07	75.81	71.00	67.71	67.00	74.00	72.00	78.00	82.00	82.00	79.00
Pavement concrete	cy	13.20	19.69	18.97	19.00	19.09	22.00	23.00	24.00	20.00	23.00	26.00	20.00
Reinforcing steel	cwt	9.60	12.70	14.30	13.70	14.00	13.00	13.00	13.00	16.50	17.00	18.00	17.90
Cement	bbl	2.84	4.98	4.63	4.83	4.63	4.68	4.76	5.04	5.21	5.11	5.12	5.00
CM pipe 12"	lf	2.20	3.03	3.65	3.61	3.70	3.60	3.72	3.98	4.13	4.48	4.57	4.33
CM pipe 24"	lf	4.05	5.26	6.16	6.46	6.33	6.84	6.66	6.60	7.29	8.04	7.60	7.56
RC pipe 18"	lf	3.50	4.27	5.50	6.25	5.10	5.15	5.37	5.91	6.25	6.24	6.46	6.38
RC pipe 36"	lf	8.29	10.47	14.33	13.94	11.24	11.62	11.23	11.86	13.08	13.75	13.13	12.72
VC pipe 6"	lf	1.87	2.39	2.94	3.01	2.80	2.75	3.38	3.50	3.55	3.70	3.37	3.31
VC pipe 8"	lf	2.22	2.80	3.77	3.53	3.40	3.36	3.71	3.99	4.36	3.67	3.99	4.01
Sewer manhole	1/10 ea	16.50	20.80	22.82	25.34	23.67	23.70	23.00	24.90	25.40	28.20	27.70	27.40
Roadway excavation	cy	0.67	0.96	0.92	1.07	0.87	0.80	0.95	0.92	1.12	1.05	1.04	1.09
Structural excavation	cy	2.49	4.27	3.42	3.57	3.72	3.78	3.48	3.63	4.42	5.42	3.66	3.78
Watering	M gal	2.13	2.13	1.97	2.14	1.74	1.71	1.69	1.76	1.94	1.92	2.00	1.86
Flat wheel roller	R-hr	5.47	7.82	7.26	8.00	9.86	8.50	7.74	8.15	9.03	10.06	11.72	11.31
Piling, green wood, fur	lf	0.64	0.65	1.68	1.01	1.48	1.17	1.20	1.35	1.18	0.895	0.84	1.09
Piling, treated, fur	lf	1.25	1.45	2.03	1.77	1.64	1.84	1.75	2.00	1.83	2.75	4.13	1.77
Timber in place	100 fbm	16.60	26.33	30.90	30.80	42.20	32.10	36.70	45.20	49.60	50.50	58.10	39.30
2" Galv steel pipe	lf	1.04	1.38	1.51	1.68	1.62	1.65	1.74	1.60	1.68	1.62	2.23	1.67
Cast-iron pipe 6"	lf	2.86	4.17	4.42	4.15	4.15	4.36	3.94	4.54	4.70	5.42	5.32	5.40
Cast-iron pipe 8"	lf	3.80	6.47	6.29	5.66	5.04	4.80	4.79	5.23	5.83	6.07	6.79	6.27
Gate valve 6"	1/10 ea	7.06	9.70	10.55	11.30	10.30	8.85	10.40	12.50	12.40	10.08	11.80	11.50
Total in dollars		193.85	256.01	280.34	281.48	280.97	273.78	281.49	299.67	317.83	329.93	346.03*	315.79

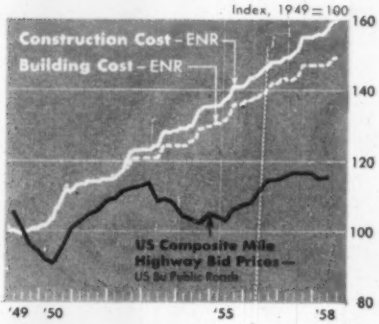
* Revised



Contractors trimmed bid prices by 8.7% on heavy construction projects let in western states during the first half of '58. The index computed by the San Francisco District Corps of Engineers dropped for the first time since early 1955.

Composite Mile Highway Price Index

US Bureau of Public Roads
Indexes, 1925-29=100



Bid prices on federal-aid highways firmed up in the second quarter, but the BPR Composite Mile Index was 0.8% under a year ago and 1.2% below its peak.

Year '25-'29=100	Excavation[1] 17,491 cy* Bid price $0.35†	Excavation[1] 17,491 cy* Sub-index 100.0	Surfacing[2] 3,726 sy* Bid price $2.22†	Surfacing[2] 3,726 sy* Sub-index 100.0	Structures Reinf. steel 16,000* lb. Bid price $0.052†	Structures Struct. steel 4,325* lb. Bid price $0.067†	Structures Struct. concr. 68* cy Bid price $22.15†	Structures Comb. Sub-index 100.0	Composite Mile Index 100.0	ENR 20-Cities Construction Cost Index 100.0
1926	0.36	103.7	2.29	103.1	0.053	0.074	22.76	103.7	103.4	100.5
1939	0.21	59.8	1.73	77.8	0.044	0.059	19.13	85.9	72.6	113.8
1946	0.35	99.1	2.65	119.3	0.075	0.113	38.79	164.7	119.0	167.2
1949	0.38	107.4	3.40	153.1	0.104	0.146	47.36	210.3	145.8	230.5
1950	0.33	94.5	3.32	149.8	0.100	0.139	44.62	199.4	137.7	246.3
1951	0.39	110.0	3.54	159.5	0.120	0.180	52.07	237.8	153.7	262.2
1952	0.40	114.2	3.80	171.3	0.124	0.186	54.50	247.8	162.5	275.1
1953	0.38	108.6	3.82	172.0	0.122	0.186	53.53	243.8	160.2	289.9
1954	0.35	100.9	3.63	163.6	0.116	0.167	50.91	229.9	151.2	303.4
1955	0.36	101.9	3.67	165.3	0.116	0.165	51.99	232.8	152.8	318.8
1956	0.38	108.2	3.89	175.5	0.131	0.202	54.33	253.8	163.3	334.6
1957 Average:	**0.40**	**113.5**	**4.02**	**181.2**	**0.137**	**0.218**	**56.92**	**267.0**	**170.0**	**349.8**
Q1	0.39	111.7	4.01	180.8	0.141	0.215	57.46	270.6	169.7	342.4#
Q2	0.40	113.4	4.00	180.3	0.137	0.221	57.35	268.7	169.8	348.6#
Q3	0.40	112.5	4.02	181.3	0.135	0.225	57.48	268.3	169.9	355.5#
Q4	0.41	116.5	4.04	182.2	0.135	0.210	55.40	260.4	170.6	356.6#
1958:										
Q1	0.39	110.3	4.02	181.3	0.131	0.201	54.99	255.6	167.1	359.7#
Q2	0.40	114.5	4.03	181.7	0.130	0.192	54.85	252.9	168.5	365.9#

*[1] Common excav. plus other expressed as equivalent common *[2] Portland-cmt. concr. plus other expressed as equivalent portland-cmt. concr. ** Fixed quantities used for establishing price trend *† Prices used for base year index *# Last month of quarter.

Easy, Proven Way to Permanently Bond New to Old Concrete – for less than 4¢ per square foot!

WELD-CRETE®

Weld-Crete is the patented, job-proved liquid bonding agent which enables you to *permanently* bond new concrete, or cement plaster, *directly* to any other structurally sound surface no matter how smooth! No costly, time-consuming surface preparation. Just apply, let dry, and pour or trowel new concrete. Ideal for new construction, remodeling, repairs . . . *ramps, floors, precast shapes, driveways, highways, walls, machine mounts and pads.* Weld-Crete has equal bonding permanence all climates, all surfaces, all sorts of conditions. When used with quick setting cement topping you can lay new floors, ramps, driveways one day and run heavy truck traffic over them the next. Get fact-packed literature from your Building Materials Dealer, see Sweet's File, or write us direct. Address Larsen Products Corporation, Box 57561, Bethesda Maryland.

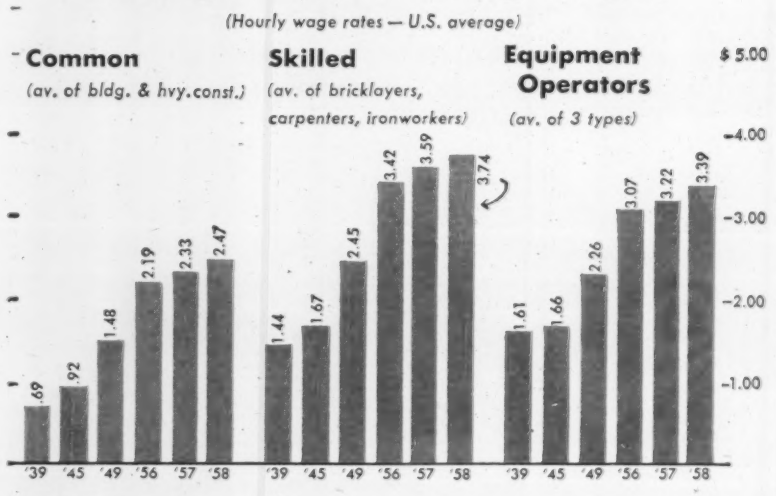
Typical **WELD-CRETE** Applications

GRANVILLE ST. BRIDGE, VANCOUVER, BRITISH COLUMBIA—One of the largest 8 lane bridges in North America. Here Weld-Crete was applied to bridge surface to bond cement dividing strips. Now, over 4 years later, bonds are as good as new. *General Contractor:* Dominion Bridge Company.

SEVEN CORNERS SHOPPING CENTER, FALLS CHURCH, VIRGINIA—During construction of this 600,000 sq. ft. structure, initially only part of floor was poured and floated to a smooth finish. Areas in which show windows would be added were poured as base slab only. Slab was coated with Weld-Crete. After store fronts were custom-built, delayed toppings of 1" to 1½" thick were poured with assurance of permanent bond to base slab. These toppings were then finished with asphalt tile, wood, or finish flooring of lessee's choice. Designed and constructed by The Kass Realty Co. of the Kass-Berger Organization under direction of J. Franklin Groff. *Concrete Contractor:* Moses-Ekco.

Third Quarterly Round up: ▶ **Labor Rates**

Twenty Years of Rising Wages



'58 Wage Boosts Trail '57

Construction labor unions this year won smaller increases from contractors in the January to September period than in 1957. A stronger stand by contractors trying to hold the wage line worked better than the early 1958 settlements indicated.

Common labor on both building and heavy construction were hit hardest by the cutback in wage increases. ENR's 20 cities average wage rates show that common labor on building construction gained 9.7 cents per hour so far this year, compared to a 12.1 cent gain from January to September, 1957. Common wage boosts for labor on heavy construction also declined from 12.3 cents per hour in 1957 (January to September) to 10.2 cents in 1958.

Skilled laborers did a little better. ENR's 20 Cities average wage rates for bricklayers, carpenters, structural ironworkers show a 3.2% gain thus far in 1958 compared to a 2.7% increase in the same period last year. In fact, bricklayers improved their wage gains: 12.3 cents per hour this year against 9.9 cents in 1957. Structural ironworkers won the smallest increase, 11.2 cents, down sharply from the 15.3 cents per hour boost in 1957. Carpenters' wage increases are also down from 13.6 cents last year to 11.8 cents per hours so far this year.

By contrast, equipment operators are winning bigger raises this year. The 20 Cities average for the three types (tractors, power shovels and air compressors) is 17 cents per hour in 1958 (August to August) as against 15 cents last year.

1958 wage increases, including fringe benefits, city-by-city are:

Atlanta: Common +15¢, bricklayers +30¢, carpenters +15¢.

Baltimore: Common +15¢, three skilled trades +0.5¢ to 15¢.

Birmingham: Common +0.0¢, bricklayers +10¢, ironworkers +15¢.

Boston: Common +12.5¢, bricklayers +10¢, carpenters +15¢.

Chicago: Common +0.0¢, three skilled trades +5¢ to 21¢.

Cincinnati: Common +12.5¢, three skilled trades +10¢ to 12.5¢.

Cleveland: Common +9.5¢, three skilled trades +9¢.

Dallas: Common +7.5¢, three skilled trades +7.5¢ to 10¢.

Denver: Common +7¢, carpenters and ironworkers +5¢.

Detroit: Common +11¢, three skilled trades +15¢ to 24¢.

Kansas City: Common +10¢, three skilled trades +10¢ to 20¢.

Los Angeles: Common +20.5¢, three skilled trades +5¢ to 33¢.

Minneapolis: Common +15¢, three skilled trades +15¢.

New Orleans: Common +5¢, three skilled trades +5¢.

New York: Common +10.8¢, bricklayers +20.8¢, carpenters +10.8¢.

Philadelphia: Common +10¢, three skilled trades +10¢ to 25¢.

Pittsburgh: Common +7.5¢, skilled trades +17.5¢ to 30¢.

St. Louis: Common +12.5¢, three skilled trades +12.5¢ to 17.7¢.

San Francisco: Common +18¢, carpenters +15¢.

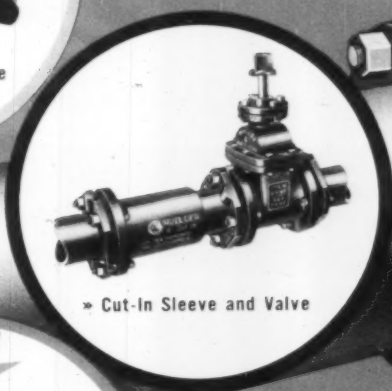
Seattle: Comn. +0.0¢, bricklayers +15¢.

MUELLER®

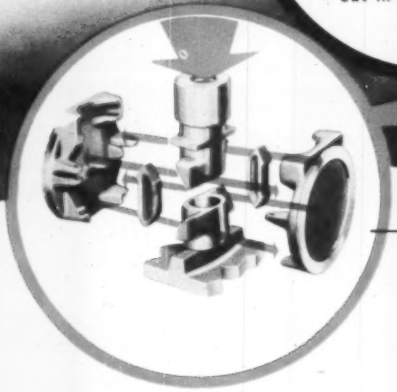
"four point" valves

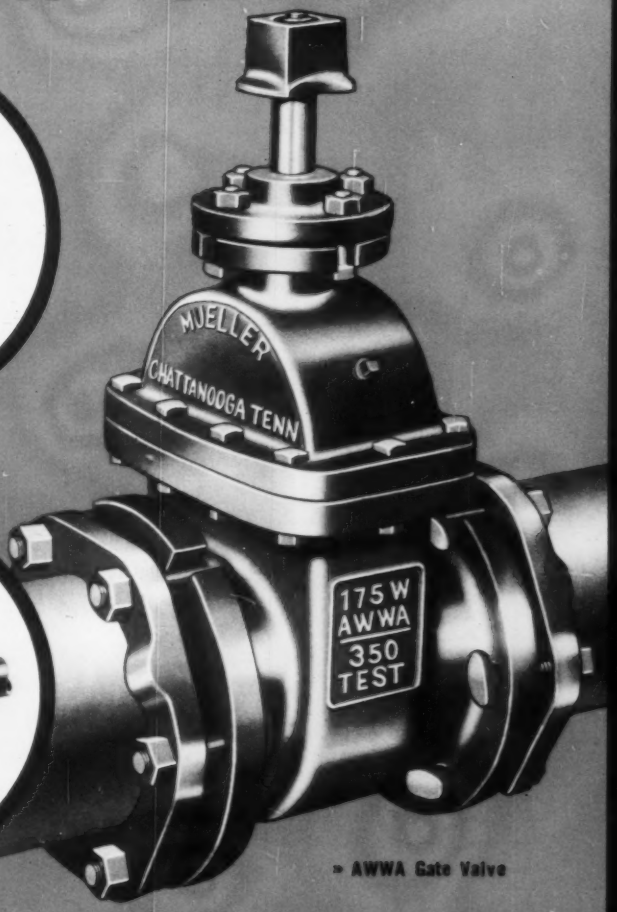
» Inserting Valve

» Tapping Sleeve and Valve



» Cut-In Sleeve and Valve





» AWWA Gate Valve

Exclusive "four point wedging mechanism"

» MUELLER AWWA Gate Valves, Tapping Sleeves and Valves, Inserting Valves, and Cut-In Sleeves and Valves all feature perimeter disc seating made possible by the exclusive MUELLER "four point wedging mechanism". The seating force is applied at four points on the perimeter of each disc. This eliminates disc deflection and distortion for tight shut-offs.

The gate mechanism allows the disc to retract slightly in vertical movement—preventing abrasive sliding, yet maintaining a minimum clearance so that the discs positively shear any deposits from the seat rings. The bronze seats, which are screwed into the body, and the bronze seat rings, which are rolled into dovetailed slots in the discs, are precision machined for tight shut-offs and long life.

MUELLER CO. Since 1857 SERVING the Water and Gas Industries QUALITY

MUELLER CO.
DECATUR, ILL.

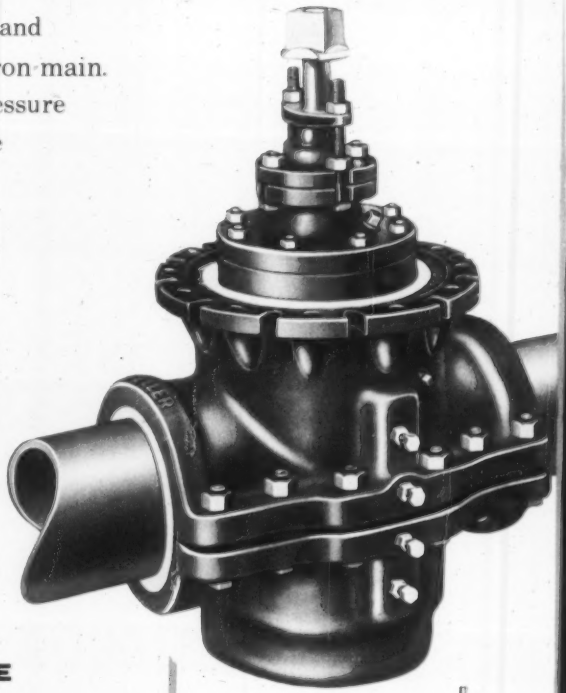
Form No. W-8899

Printed in U.S.A.

You can add dependable MUELLER inserting valves UNDER PRESSURE

» MUELLER Inserting Valves may be quickly and easily installed in any existing 4", 6" or 8" cast iron main. The entire job is done under full water service pressure without loss of water or interruption of service to customers and fire hydrants.

You can add MUELLER Inserting Valves where present valves do not work or in hydrant stubs to permit repairs. Once installed, Inserting Valves are operated like ordinary gate valves. In fact, the gate and seating assembly is identical to that of the dependable MUELLER AWWA Gate Valves. The parts are interchangeable. MUELLER Inserting Valves are for service pressures to 175 p.s.i.



here's how **MUELLER** *inserting valves are installed* **UNDER PRESSURE**

1

bolt sleeve to main

• Clean the main. Then bolt the sleeve halves together around the main.

2

prepare sleeve

• Pour lead end joints and calk. Attach pipe clamps and slide valve.

3

make the cut

• Attach the Mueller Drilling Machine and make the cut. The "CL-12" is shown, but the "C-C" and "C-I" machines are suitable. The section of the main inside the sleeve is removed with the drilling machine.

for mains that can be isolated without inconvenience or fire hazard,

use a **MUELLER**

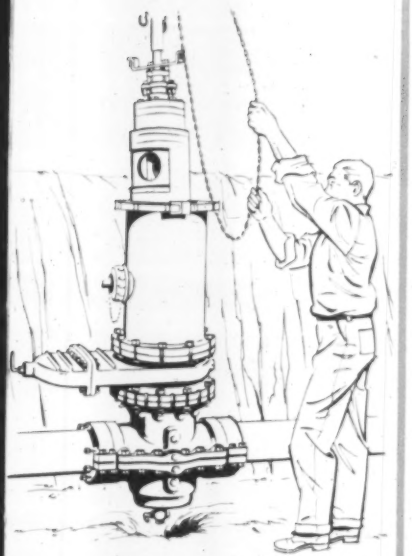
CUT-IN SLEEVE and VALVE

» A MUELLER Cut-In Sleeve and Valve may be installed where it is possible to shut off the water. Mechanical joints on the Cut-In Sleeve and Valve permit rapid installation.

Two sizes of end gaskets adapt a MUELLER Cut-In Sleeve and Valve to all classes of cast iron pipe in regular use! Rapid water-tight installations are assured by using the proper size end gasket.

The gate and seating mechanism of a MUELLER Cut-In Valve is the dependable MUELLER AWWA Gate Valve "four point wedging mechanism". Time-proven... you are assured dependability and long life.

The Cut-In Sleeve and Valve is available in sizes 4", 6", 8", 10" and 12".



4

prepare valve plug assembly

• Bolt the long adapter to the slide valve. The valve plug assembly is readied for insertion into the main.

5

insert valve plug assembly

• Fasten valve plug assembly to "CL-12", "C-C", or "C-1" Drilling Machine and lower valve plug assembly into place.

6

complete installation

• Tighten the packing screws and pour lead to form the top joint for final sealing of the valve plug assembly.

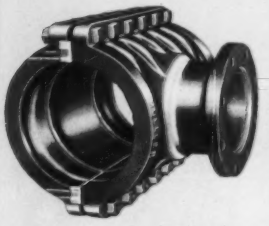
MUELLER

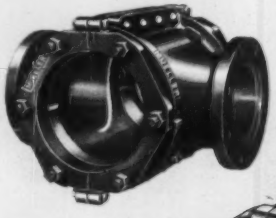
tapping sleeve and valve or tapping cross and valves

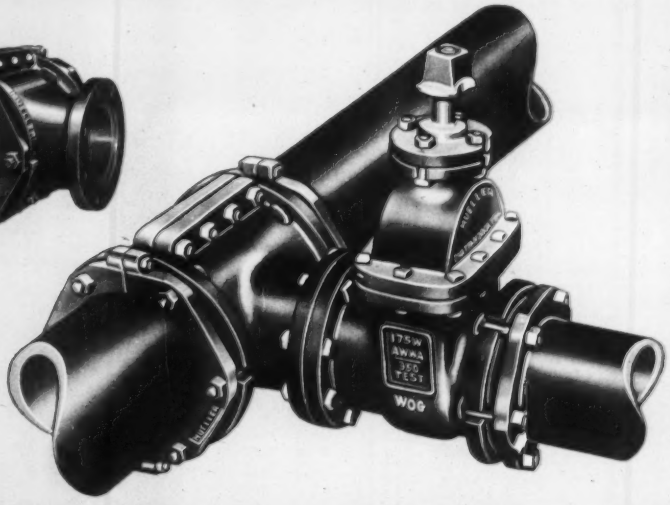
FOR LATERAL AND BRANCH MAIN CONNECTIONS

» Next time you add a lateral for that new subdivision, use a dependable MUELLER Tapping Sleeve and Valve or a MUELLER Tapping Cross and two Valves. These fittings permit branch main connections to be made under pressure with no loss of water. The MUELLER Tapping Sleeve and Tapping Cross have extra long length and heavy cross sections to strengthen the main-lateral connection. Calked joints or mechanical joints permit rapid pressure-tight installations. Calked joint tapping sleeves and tapping crosses fit all classes of pipe in general use. Two sets of end gaskets readily adapt the mechanical joint tapping sleeves and tapping crosses to all classes of cast iron pipe regularly used.

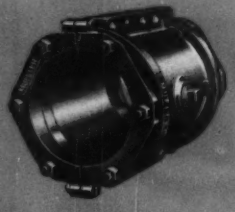
Non-rising-stem tapping valves feature the same gate and seating system as the job-proven MUELLER AWWA Gate Valves. Conventional packing or "O" ring stem seals are available on tapping valves sizes 2" through 24".







• Calked joint tapping sleeves and tapping crosses are available for mains 3" through 48" with outlets 2" through 24". Mechanical joint tapping sleeves and tapping crosses are available for main sizes 4" through 12" with outlets 2" through 12".



• Calked joint repair sleeves are available in sizes 3" through 36" and the mechanical joint repair sleeves are available in sizes 4" through 12".

for repairing mains, use MUELLER *split repair sleeves*

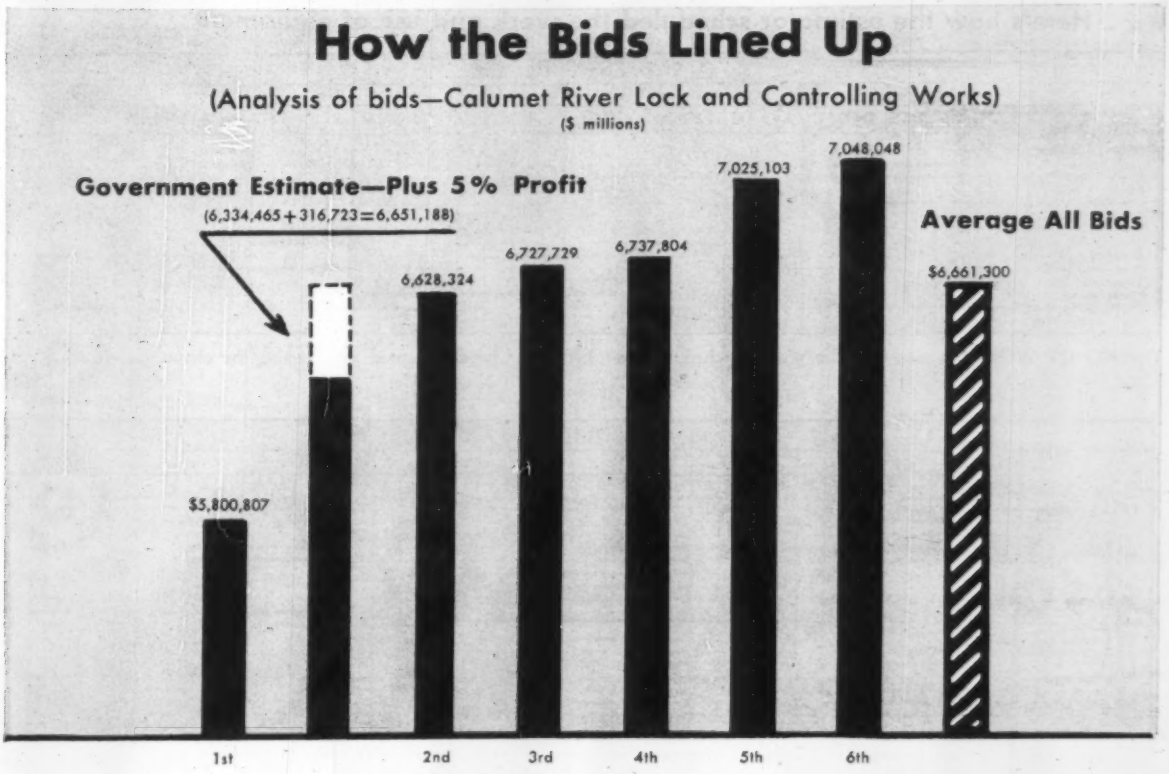
» The long length and extra heavy construction of MUELLER Split Repair Sleeves provide maximum support and rigidity to strengthen the main. The outlet plug on the sleeve permits water drainage while the sleeve is being installed, relieving the water pressure. Calked joint repair sleeves fit all classes of pipe in general use. Two types of end gaskets adapt the mechanical joint repair sleeves to all classes of cast iron pipe regularly used, assuring rapid water-tight installations.

Consult your MUELLER Representative or write direct for full details.

MUELLER CO. Since 1857 SERVING the Water and Gas Industries QUALITY

MUELLER CO.
DECATUR, ILL.

Factories at: Decatur, Chattanooga, Los Angeles.
In Canada: Mueller, Limited, Sarnia, Ontario



SIX BIDDERS on the Calumet River Lock project came close to the government's estimate. Average was 0.15% above the government's 5% profit estimate; they ranged from 12.8% below to 6% above.

Cost Estimating in Depth Pays Off

It sharpens engineers' appraisal of contractors' bids, supports award decisions, brings other benefits

Seymour Berger
Vice President
Builders Estimating Service, Inc.
New York City

While "precision" estimating is standard on Corps of Engineers jobs the engineer's estimate for the Calumet River Lock and Control Works at Chicago presented some special problems. In spite of these it shows what close estimating can be done by the methods adopted when estimating gets back to first principles and starts from scratch.

The Corps is required to make this "reasonable contract estimate" and to support and document it. It must be detailed and defensible against protest by bidders should a major difference develop or should bids be rejected. It is prepared and made public under essentially the same conditions as the contractors' bids, except that it is shown as a "no profit" estimate.

On the Calumet job this is how the engineers' estimate placed in the field of six bidders: The "no profit" estimate placed second, 9.2% above the $5,800,807 low bid, 4.4% below the second bid and 4.9% below the average of all bids. The estimate with 5% profit added placed 0.34% over the second bid and 0.15% below the average of six contractor bids. The low bidder based his bid on his own alternate cofferdam design.

These special problems complicated the estimating: work must proceed with all possible speed, the hard Chicago winters must be considered, the channel must be kept open to traffic, there was a possible wait for steel delivery.

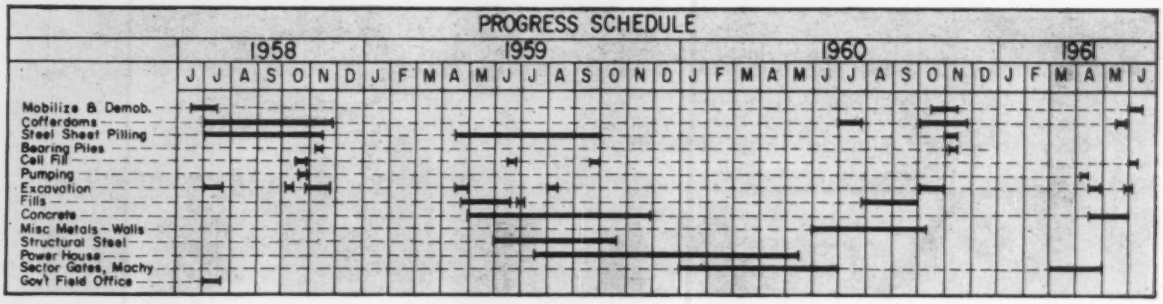
In the interest of speed and economy, the Chicago District called in the New York City cost consultants, Builders Estimating Service, Inc., to do the job under the guidance and supervision of the Corps' engineers.

The estimators started their work when the project was advertised for bids. The chief estimator and his assistant appraised 150 contract drawings and more than 400 pages of specifications, then assigned portions of the project to the estimating staff. The final estimate ran 350 pages, with supporting detail, including price quotations, definition of methods assumed as the basis for estimating and other procedures. This estimating had to be scheduled carefully to be ready for government review some two weeks before the bid opening. The Calumet project is a sheetpiling and concrete structure 1,000 ft long, 110 ft wide and 25 ft high. It requires this sequence of operations:

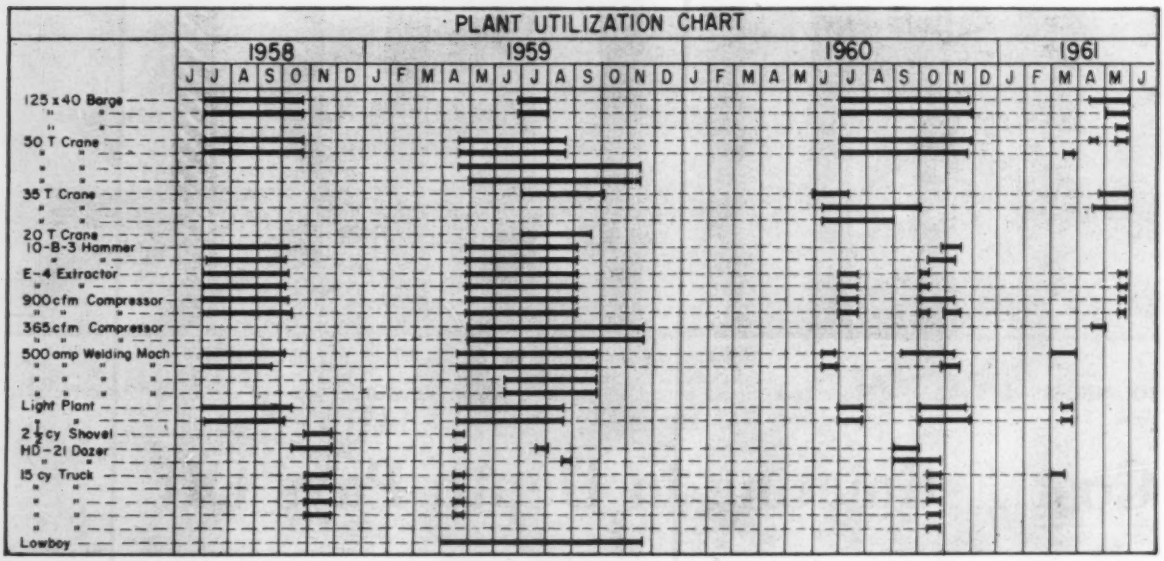
- Construction, maintenance, unwatering and removal of cofferdams.
- Construction of lock, with lock gates, operating machinery, bulkheads and slide gates.
- Construction of control dam, with slide gates.
- Construction of power house and control houses.
- Construction of upper and lower guide walls.
- Paving of esplanade, parking areas and access roads, and appurtenant work.

Construction must be accomplished

. . . Here's how the estimator scheduled the work and use of equipment



TIMING OF WORK, as shown in the progress schedule, was directed by need for speed and keeping the channel open.


PLANT UTILIZATION CHART
1958
1959
1960
1961
J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J
125 x 40 Barge
50 T Crane
35 T Crane
20 T Crane
10-B-3 Hammer
E-4 Extractor
900 cfm Compressor
365 cfm Compressor
500 amp Welding Mach
Light Plant
2½ cy Shovel
HD-21 Dozer
15 cy Truck
Lowboy

EQUIPMENT COSTS were estimated two ways: hours of operating time and number of weeks each unit had to be on the job.

in an existing waterway without disrupting traffic.

• **Fast work needed**—Time for completion, 1,080 days, was set by the progress schedule shown in top chart. The project is a critical one that must be constructed with all possible speed. However, the phasing of the several major construction items was made difficult by the Chicago winters and the need to keep the channel open to traffic. Since channel navigation may not be interrupted, the lock must be completed and operating before work on the control dam can start. Thus the construction splits naturally into two efforts, the second starting some two years after the first.

Procurement of the steel for the temporary cofferdams might have been a source of delay; little work could start before these were in place. An unduly short period for completion of the work might have forced the contractor into overtime, which could result in increased costs to the government.

The estimator prepared a comparative cost analysis for straight time work vs. several possible overtime schemes. A construction schedule was sketched out for each of the schemes; these were applied against anticipated delivery of materials, and reasonable completion dates were determined. This information was supplied to the District Engineers, who set 1,080 days as a reasonable period to allow time for normal delivery delays and permit enough flexibility for contractor option in scheduling.

The Corps laid down these rules:

• Straight unit-price estimating will not do.

• Office, overhead, and distributive costs may not be treated as a percentage markup—they must be detailed.

• Materials and supplies costs must be thoroughly documented.

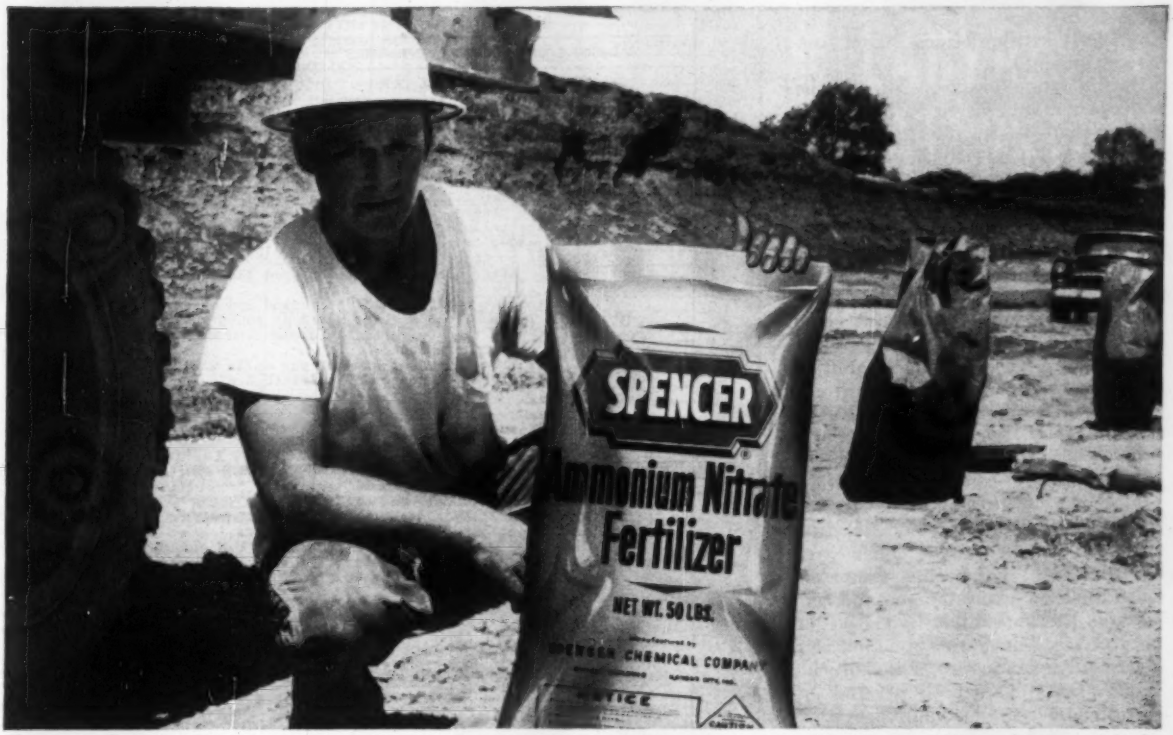
• Labor costs must be developed in man hours at realistic rates.

• Construction equipment must be costed for both hours of operation and for time present at the job site.

Thus construction equipment and plant required its own progress or plant utilization diagram. The chart above illustrates for some of the equipment how each unit was scheduled for the cost estimating work plan.

• **Figuring the equipment**—Equipment cost estimating must allow for three factors: equipment productivity, ownership or rental rates, and over-all job scheduling. This is standard procedure except where singular problems are encountered, beyond the estimator's previous experience, or where new or unusual equipment is indicated by the nature of the work. Then the estimator consults the manufacturer's field representative or makes field trips to study unusual applications of plant.

The engineering estimator, of course, has no way of knowing what contractor equipment will be available for the job, so he must base his costs on what he thinks a prudent contractor would select. Should this equipment be owned? Or rented? The number of units and



This new Spencer improvement — shipping ammonium nitrate in sturdy polyethylene bags — now makes it possible to store oil filled bags without danger of leakage. Bags can even be stored out in the open for days!

Now! Ammonium Nitrate In Plastic Bags:

Revolutionary new polyethylene bags for Spencer Ammonium Nitrate end nuisance of leaking oil, slippery bags . . . help solve storage problems because they can be stacked outdoors.

Better than ever is the ammonium nitrate blasting process, pioneered four years ago by Spencer Chemical Company. That's because Spencer now offers you ammonium nitrate in heavy-duty *polyethylene* bags!

This new Spencer exclusive means that Spencer Ammonium Nitrate is easier to handle, easier to store.

Greater cleanliness is the first advantage these new bags offer. In the field it is common practice to add oil directly to the nitrate in the bag and then store it. This allows oil to soak into the nitrate and gives better results.

With paper bags, leakage often results. Bags get oily and soiled, making them hard to handle, and they have to be kept upright. With polyethylene bags, you can add oil through a small opening at the top of the bag and then seal it up with tape! You can then stack bags in the normal manner without fear of leakage. Oil soaks into the mix, not into trucks or storehouse.

And unlike paper bags, waterproof polyethylene bags can be left in the open field—even during rainstorms! No need even to cover them up. And because they *can* be left in the open field, Spencer Ammonium Nitrate bags can solve critical problems of storage space.

Besides these exclusive bags, Spencer offers you free advice and service, giving you the full benefits of the knowledge and experience gained from its pioneer work in this field. Spencer's special bulletin, "Cut Blasting Costs with Spencer Prilled Ammonium Nitrate," is yours for the asking. Mail coupon today!

SPENCER

MAIL THIS COUPON:

Spencer Chemical Company
Sales Supervisor,
Industrial Ammonium Nitrate
407 Dwight Building
Kansas City 5, Missouri

☐ Please send me free Spencer bulletin, "Cut Your Blasting Costs with Spencer Prilled Ammonium Nitrate."

☐ Please have a Spencer Technical Service Representative call—without cost or obligation to me.

Name_____

Company_____

Address_____

Post Office_____ State_____

the types must be decided before costing can proceed.

As the estimating proceeds and the hours of use are entered on plant utilization (chart 3), it grows to show the number of weeks each item must be charged to this project. The chart, as it grows, brings many changes in the tentative construction schedules already drawn up.

Stringent scheduling often can be eased by working equipment more hours than a standard work week. Here, of course, the overtime at premium labor costs must be weighed. But in some cases, overtime or multishift operations may prove to be an over-all economy.

Costly floating equipment for the project justified alternate estimating. The channel wall cells had to be driven with floating hammers, but the land wall cells could be driven equally well with land rigs. The former scheme entailed difficult excavation around and inside of the land wall cells. The advantages of scheduling, and nonduplicated plant, did not seem to overcome this disadvantage. Thus both wet and dry based hammers were employed in arriving at the cost for this item.

On top of ownership or rental costs, cost of mobilizing and demobilizing equipment had to be estimated, as well as the cost for fuel, operating expenses and repairs.

• Labor costs – These also depend largely on contractor management. Since the engineering estimator has no way of knowing who the contractor will be, he again has to decide what a "prudent contractor" would do.

Going wage rates for the project site were used along with premium overtime scales, employee benefits, and probable increases during the life of the project. An hourly average total wage for each trade was established.

Man-hour estimating on routine operations is easy for the experienced estimator, but two labor items on this project presented problems:

1. The forming and pouring of concrete gate blocks.

2. The installation, mostly underwater, of the guide wall tie rods.

These required special study, discussion and analysis with the engineers. The procedure, adopted as reasonable to produce a fair cost, is documented to support the estimate. It is neither recommended nor specified. The contractor freely selects his own methods.

The gate blocks were to be poured in many lifts with each pour separated from the previous pour by difficult and time-consuming form work. Each team of carpenters, lathers, concrete men, spotters, pushers and helpers had to be timed and scheduled.

Installation of guide wall tie rods (chart 4) was to be mainly underwater by teams of divers. This operation and setting the wales for the river walls were defined in the estimating document in this detail:

"The structural steel for the wales will be fabricated on the job site in sections of 40 ft.

"Two divers will work together, one on each side of the sheet piling, supported by hanging scaffolds. A crane with sling will support wales until the diver can set and bolt them. After the wales are set, two teams of two divers each will splice wales using bolts as option. Work will be on a five day, one to eight hour shift basis.

"Required hours for fabrication and setting of wales:

"1. Weld spacers to channels: Approximately 106 sections of 40 ft each will have to be welded together. Allow two crews of three men each 80 hours.

"2. Setting wales in place: On the river side, 53 sections–four divers can set and bolt 20 sections in two hours; on the land side, 53 sections–four divers can set and bolt 20 sections in three hours.

"3. Splices: 106 splices required–two divers at one hour per splice.

"4. ¾ in. plates welded to wales: 726 plates. Two welders welding 73 plates per day."

Extra time for setting underwater wales on the land side was allowed because work was within 6 in. of a muddy bottom there and unobstructed on the other side.

The estimating forms used for documenting the methods on which the estimate is based and for pricing the equipment and labor costs are shown in charts 5 and 6 for the 2,362 cu yd of concrete in Item 12E, River Lock Wall Cell Caps.

• Materials and supplies–These were priced on quantities furnished by the design agency, the Corps of Engineers, Buffalo District, but checked by the estimators. Competitive firm prices and

GOVERNMENT ESTIMATE WORK SHEET — SHEET 1 OF 3

PROJECT: CAL-SAG LOCK & CONTROLLING WORKS

SUBJECT: 12E-RIVER LOCK WALL CELL CAPS — QUANTITY: 2362 cyds.

AVAILABLE OPERATION TIME IN: CALENDAR DAYS — WORKING DAYS

PLAN OF OPERATIONS: The Cell Cap of the River Wall will be poured by crane and bucket within the lock area. Delivery will be made by Transit Mix Trucks.

The inside Cell Cap will be poured first, so that additional cellular fill can be placed before the outside cell cap can be placed. After the outside cap is poured then the rest of the cellular fill can be placed.

In order to secure the forms on the outside edge of the cells, the contractor will spot weld iron braces to the sheet piling. After the forms are stripped these braces will be removed.

A tubular scaffold will be rented and erected by the contractor. The scaffold will be moved as pours and forming progress. It will then be partially dismantled and re-erected on the other side of the lock.

Work from the water side of the cells will be on wood floats built by contractor of sufficient size to permit safe conduct of work.

DETERMINATION OF CONTROLLING PLANT OR LABOR OUTPUT, AMOUNT OF CONTROLLING PLANT OR LABOR, OPERATIONAL SHIFTS AND SECONDARY PLANT REQUIRED TO ACCOMPLISH WORK IN AVAILABLE WORKING DAYS

The outside Cell Cap will be poured in 22 sections of approximately 27 cyds. each. The inside bumper will be poured in 22 sections of approximately 77 cyds. each. These outside sections will be poured at one time, two inside sections will be poured at one time.

Required days for construction 65 days

SUMMARY OF OPERATIONAL TIME

SHIFTS PER DAY 5 — HOURS PER SHIFT 8 — PLANT HOURS 648 — WORKING HOURS 520

REMARKS

ESTIMATE WORK SHEETS for each item in the bid describe the field methods adopted as the basis for estimating. They analyze output, quantities and working schedule.

GOVERNMENT ESTIMATE WORK SHEET — SHEET 2 OF 3

SUBJECT: 12E-RIVER LOCK WALL CELL CAPS — QUANTITY: 2362 cyds

PLANT

	UNIT OF PLANT	SIZE	NO.	* HOURS	RATE	AMOUNT
RENTAL	Crane-70' Boom	35T	1	648	11.54	7478
	Bucket	1 cyd.	1	648	.37	240
	Vibrators		2	648	.46	596
	Welding Machine	400 AMP	1	138	.50	69
	Electric Generator		1	0	--	--
	Tubular Scaffold	10'x5'x5'	146	3 mos.	520	1560
OPERATING SUPPLIES & FIELD REPAIR	Crane-70'Boom	35T	1	430	1.59	634
	Bucket	1 cyd.	1	340	.02	7
	Vibrators		2	285	.02	11
	Welding Machine	400 AMP	1	110	1.37	151
	Electric Generator		1	0	--	--

* NOTE: Use Calendar Hours for Plant Rental and Working Hours for Plant Operating Supplies and Field Repairs.

SUBTOTAL 10,796

SMALL TOOLS 3 % OF LABOR 2,809

TOTAL PLANT COST

LABOR

OPERATION	CRAFT	NO.	† HOURS	RATE	AMOUNT
Concrete Placing	Laborers	9	352	2.85	9029
Concrete Placing	Carpenters	2	352	3.65	2570
Form Placing	Carpenters	12	520	3.65	22776
Form Placing	Laborers	6	520	2.85	8892
Form Placing	Welder	1	220	3.65	803
Form Stripping	Carpenter	2	210	3.65	1533
Form Stripping	Laborers	6	250	2.85	4275
Form Stripping	Welder	1	110	3.65	402
Curing	Laborer	2	210	2.85	1197
Finishers	Masons	3	380	3.65	4161
Crane	Crane Operator	1	430	3.80	1634
Crane	Oiler	1	430	2.80	1204
Scaffold(Moving)	Laborers	6	56	2.85	958
Scaffold(Moving)	Carpenters	3	56	3.65	613
Scaffold-Erection & Dismantling	Carpenters	4	35	3.65	511
Raft	Carpenters	6	50	3.65	1095
	Laborer Foreman	1	1388	3.10	4303
	Carpenter Foreman	1	1375	3.90	5363
	TOTAL			SUBTOTAL	71319
			OVERTIME 16.7 %		11910
				SUBTOTAL	83229
	COMP. & LIAB INS., SOC. SEC. & STATE EMP. INS		12.5 %		10404

† NOTE: One Working Hours — TOTAL LABOR COST 93633

FROM METHOD WORK SHEETS the necessary equipment units are selected, scheduled and priced, as are the men required in each of the trades needed.

delivery schedules were solicited from appropriate vendors and shipping costs were added where necessary.

Where alternate construction methods altered delivered material costs these were considered. For example, the filled cellular cofferdams in the lock could be driven with land or waterborne equipment. However, barge delivered cell-fill was quoted at $3.92 cu yd by a vendor who quoted $2.80 cu yd for truck delivery of the same material.

Sources of all quotations and the terms quoted were made a part of the estimate document.

Distributive costs to cover necessary overhead and "supporting" operations must get a fair and reasonable allowance. Supervisory and overhead personnel are staffed for the specific project. Costs for erection and removal of temporary facilities, supporting vehicles, either rented or owned, must be provided for. Office and other overhead supplies are charged on a weekly basis. Home office cost, performance bond, insurance and interest on operating capital are also computed. The sum of these comprises the distributive costs.

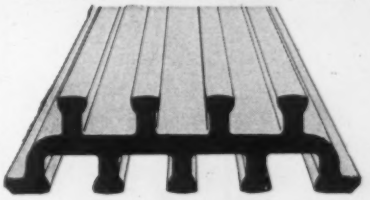
The estimating document, when completed, must stand by itself. The regulations state that it must provide a sound uniform basis: to comply with the laws governing civil works; to promote the best interests of the government; and to defend the rights of the bidders. Often its details develop important byproducts: prevent field snafus, avoid extra work charges, and find more economical materials or methods.

The cost of estimating costs in this depth varies widely with the complexity of the field operations. While it is not consistently a function of the overall construction cost it should fall within a range of 0.1 to 0.3% of the total cost of the project.

The Chicago District Engineer for the U. S. Corps of Engineers is Col. J. B. W. Corey. Barry Federman is president of Builders Estimating Service, Inc.

LABYRINTH® WATERSTOPS

A SOUND INVESTMENT FOR CONCRETE CONSTRUCTION!



LABYRINTH AVAILABLE IN 2, 3 or 4 rib.

ON YOUR CONSTRUCTION:

1. Consider the investment in design, materials and labor (to mention a few).

2. Then consider how important safe, secure *watertight* concrete joints are.

3. Thorough watertightness *can* be secured by installing Labyrinth Waterstops —a dividend that makes the low initial cost of the product insignificant when compared to your total investment—and one that insures watertight concrete joints for years!

- Corrugated ribs grip concrete, insure an everlasting bond between joints.
- Finest polyvinyl plastic resists chemical action, aging, severe weather.
- Takes just seconds to nail to form . . . easy to cut and splice on location (prefabricated fittings available).
- There's a Water Seal product for every type of concrete work!

If your aim is to stop water seepage, *stop it effectively with Water Seals' Waterstops!*

"See Us in SWEET'S"

New Literature and Free Samples Sent on Request—Use Coupon Below

WATER SEALS, inc.

9 SOUTH CLINTON STREET, CHICAGO 6, ILL.

Made in Canada for J. E. Goodman Sales, Ltd. Toronto, Ontario

WATER SEALS, INC. DEPT. 4
9 S. Clinton Street
Chicago 6, Illinois
Please send free sample and descriptive literature.

Name_____

Company_____

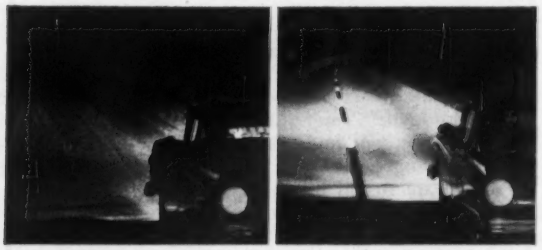
Address_____

City_____ Zone____ State_____

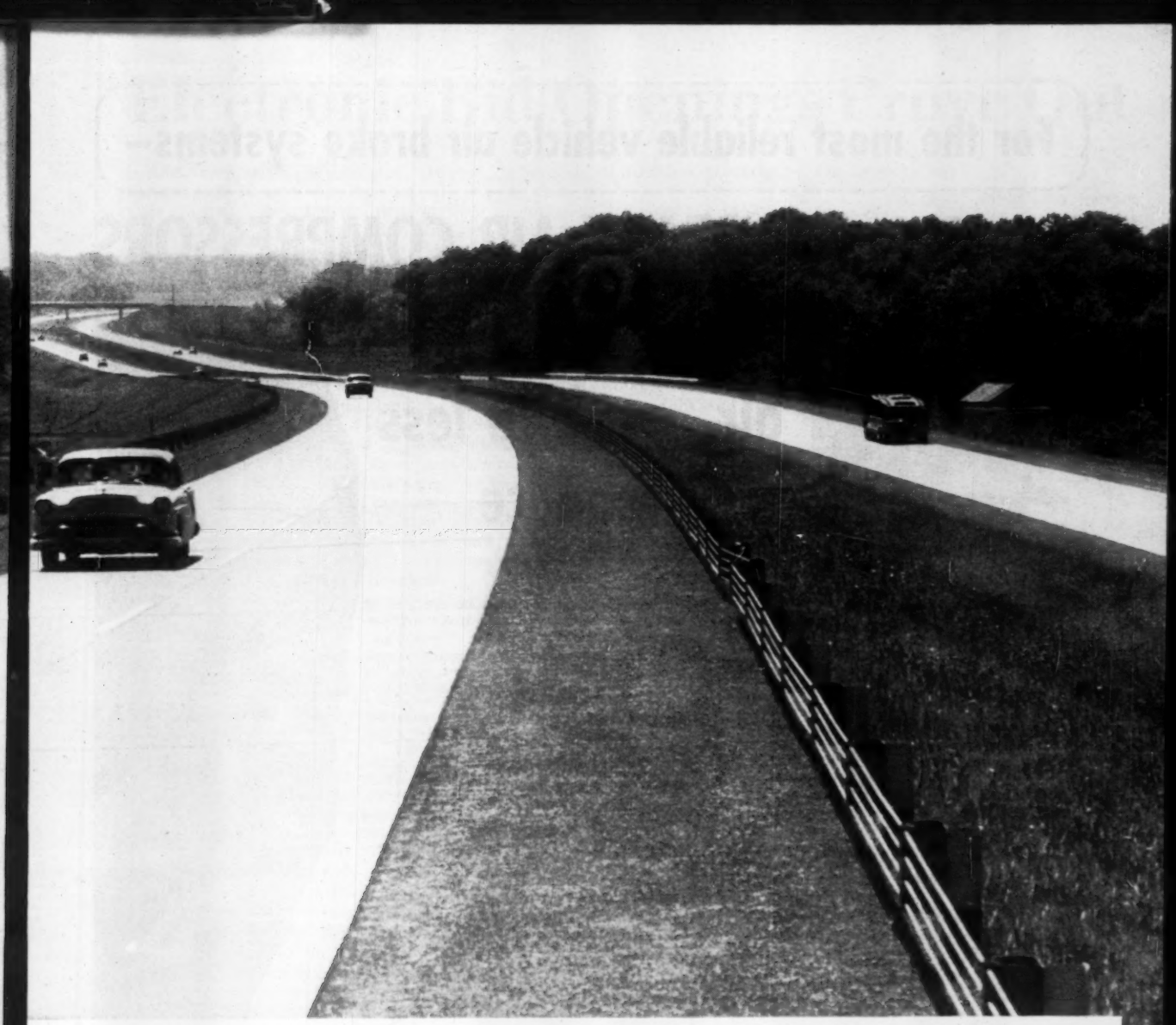
FOR HIGHWAYS WITH A SOLID FUTURE

Concrete

On the Ohio Turnpike, they paved with CONCRETE...



Concrete's high reflectance saves on lighting costs. For an average 10-mile expressway, concrete can reduce electric bills as much as $40,000 a year. And only half as many light fixtures are needed.



saved $7,181,898 in first cost alone!

Studies of pavement designs proved in advance that only concrete could give the needed strength at so low a cost. Now records show big maintenance savings, too. The consulting engineers on the Ohio Turnpike estimated that pavement maintenance for the first five-year period would be $0.02 per sq. yd. per year if flexible pavement were used, and $0.01 per sq. yd. per year if rigid pavement were laid. Concrete was chosen for the entire Turnpike.

Twenty million vehicles have travelled it the first two years, yet actual maintenance costs to date are only slightly more than *half the estimated amount!*

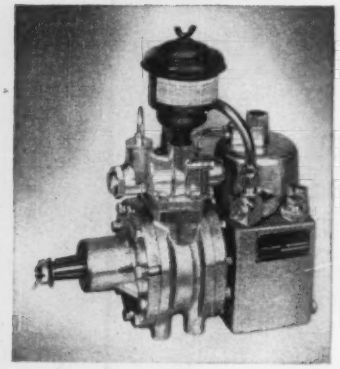
And maintenance costs will *stay* low. Concrete—because it is rigid—is the only material that has no "moving parts" to cause hidden wear. It never oxidizes—no surface treatment needed every few years. And only concrete's load-bearing strength can be computed mathematically to match future traffic, give an expected 50 years and more of safe, smooth driving.

All good reasons why concrete is the only thrifty way to build high-traffic-volume highways like those for the Interstate System.

PORTLAND CEMENT ASSOCIATION *A national organization to improve and extend the uses of concrete*

For the most reliable vehicle air brake systems–

Wagner ROTARY AIR COMPRESSORS



provide ample air...require less maintenance

It is sound judgement to equip the air brake systems of heavy duty vehicles with Wagner Rotary Air Compressors, because Wagner Compressors have the following special features:

HIGH VOLUMETRIC EFFICIENCY Rotary compression forces all air from the compression chambers. Pressure recovery is rapid at all compressor speeds.

LOW TEMPERATURE AIR DELIVERY Oil separation and cooling before air is discharged reduces temperatures and prevents carbon formation. Fire hazard is reduced. Flexible connection may be used in discharge line.

UNIFORM TORQUE LOAD Thousands of small overlapping air compression impulses per minute maintain a more uniform load with moderated stresses and assure smooth, quiet operation with long belt life.

LOW FRICTION LOSS All rotating parts are turned by the rotor shaft, suspended on two bearing surfaces.

HIGH R.P.M. Compressor can be operated at high R.P.M. High reduction drives are unnecessary.

The Wagner Rotary Air Compressor pumps compressed air into the air reservoir, providing the pressure required for the operation of brakes and other air powered devices. The compressor runs continuously while the engine is operating. Pumping is regulated by a control valve which starts or stops air compression by "loading" or "unloading" the compressor proper. This action establishes an intermittent pumping cycle which keeps reservoir pressure within the desired range.

You have a choice. These rotary compressors are available in either 9 C.F.M. capacity, air or water-cooled, or 12 C.F.M. capacity, water-cooled, and are *standard* with every Wagner Air Brake System.

For details on these compressors, Wagner Air Brake Systems and Equipment for trucks, tractors, trailers, buses and off-the-road equipment ... request a copy of Catalog KU201B.

Wagner Electric Corporation
6380 PLYMOUTH AVENUE, ST. LOUIS 14, MO., U. S. A.
(Branches in principal cities in U. S. and in Canada)

ask for Catalog KU201B

WK58-2A

Electronic Bid Openings Prove Out

Add three states, Washington, Arkansas and Florida, to the list of state highway departments that are processing contract lettings electronically. That brings the total to eight. Others are: Alabama, Kentucky, Ohio, Texas, Virginia (ENR June 19, p. 71).

Washington was the first state to adopt the idea and has the most complete system. When the state's highway department started machine tabulation of bids in March, 1956, the cost of machine rental plus operator's time was less than the cost of engineers' time on manual checking and rechecking. But the cost saving was secondary to the saving in engineering manpower for advancing the design program, reports Val G. Rinehart, assistant engineer, plans and contracts.

On a normal bid day it took 10 to 15 engineers most of the day to check bids. Now with bids opening at 10 am on 10 to 20 projects, the printed results sheets are ready the same day for awards the following day.

Washington has assigned a fixed code to more than 900 standard bid items in its "Standard Specifications for Road and Bridge Construction."

Since contractors are prequalified, each is given a permanent code. A deck of prequalified contractor cards is on file with code number, name and address ready for immediate use.

Washington started with an IBM Cardatype No. 858 with console, arithmetical unit, typewriter and key punch all in synchrony. Then the department moved to the IBM 604 for faster computations. It uses an IBM 650 for cost analysis. The Cardatype continues to be "indispensable" for preparing preliminary estimates, transcribing bids, for hourly job cost distribution for 25 engineering employees and for selecting and printing the minimum hourly wage rates.

This fully integrated system produces these results.

1. Reproducible preliminary cost estimate.
2. Reproducible transcript of bids, on transparent forms to be blueprinted.
3. Punch card deck record of contract with name and address of contractor, his code number, contract number, unit contract prices and total contract price.
4. Monthly progress estimates and payments, from contract record cards supplied to the accounting division.
5. Punch cards, available for administrative analysis.
   a. Periodical summary of estimated quantities.
   b. Summary as needed of production quantities.
   c. Periodical determination of dollar volume of contract work.
   d. Monthly cost analysis feed-back to engineers and estimators for the whole state and for eastern and western Washington separately since topographic, climatic and labor conditions differ on the two sides of the Cascade Range.

Arkansas is working on the final stage. It will have a fully integrated electronic contract processing system when it irons out details of preparing contractors monthly progress payment claims by machine. Standard or uniform code troubles for various contract items are causing the difficulties and are complicating computations of the highway department's bid price indexes.

The system, launched in December, 1957, was set up by the interdepartment team of J. R. Henderson, engineer, statistics and analyses; Fred T. Leebrick, director of accounting; and Art Johnson, machine accounting. It took them longer to sell the idea to the engineering section and get permission to use the machines than it did to work out the procedural outline shown.

With the old manual system two designers, with an electric calculator, could check and verify by 3:00 pm the bids received in a letting that opened at 10:30 am. But they had to be detached from the urgent work of preparing new plans. With the machine method, bids on 20 projects involving 91 separate bids can be computed, checked and delivered to the chief engineer by 1:00 pm ready for the commission to make the awards.

Arkansas uses an IBM 602A calculator, a 407 tabulator and key punch, verifying machines and sorter.

This is Arkansas' procedure:

Before Letting Day:

1. Key punch and verify quantities and item descriptions from bidding instructions specification sheet.
2. Print out check listings for each project on bid analysis form.
3. Audit check listings for accuracy of items, quantities and descriptions (office engineer does).
4. Gang punch sets of cards, one set for each prospective bidder (bidders average 65% of the number of contractors who buy proposal forms).
5. Interpret mutiple sets of cards.
6. Punch and verify qualified bidders name and address cards.
7. Interpret bidders cards.
8. Assemble and file cards until morning of letting.

On Letting Day:

9. Open and publicly announce official bids, correct obvious inaccuracies (office engineer does).
10. Punch and verify bidder's unit prices and his extension into his prepunched cards (also gang punch his code number into his item cards).
11. On 602-A calculator multiply quantities and unit prices to get state highway extension.
12. Print check listing of each bid on two-part paper. Forward original to office engineer with source material (official bids). Retain duplicate for data processing center.
13. Verify check listings to control data, figures then are available for awarding contracts.
14. Correct typographical or other minor errors.
15. Rearrange decks from low to high bidder in proper sequence for recapitulation by key punch personnel.
16. Run multilith mats on the 407. Show detail for each bidder on separate sheet with recap indicating the order of bid amounts.
17. Forward mats to office engineer for final check.
18. Send mats to reproduction room for producing multiple copies.

Florida changed over in January, 1958. The state finds a big reduction in the time and effort required to check the accuracy of contractor bids now that this is programed for its IBM 650 calculator. Contractor and machine differences in extensions are marked by a hyphen alongside the item when the tabulation is printed on the IBM 407.

This is done on a two-ply continuous form 12⅞ in. wide with the carbon paper built in. This form paper is perforated ½ in. from each edge and also 3¼ in. from the outer right edge. The hyphens that mark errors can be stripped off by removing the narrow perforated edge. The wider perforated strip contains the unit prices and extensions, which strip easily for mounting on a large composite sheet on which nine bids can be shown. This king size sheet is Xeroxed, reduced in size, a multilith master is made and the desired number of copies are produced.

Florida's program provides also for computing the percentage difference between the items in the engineer's estimate and the low bid, which it will feed back to its final estimates section quarterly or semi-annually.

This program was worked out by Ray G. L'Amoreaux, electronics programing engineer, and Dewey C. Newton, assistant.

Here's How to Get Better School Cost

Present methods of reporting school construction costs are unsatisfactory, claims Frederic C. Wood, consulting engineer, Wood & Sibbert, Greenwich, Conn. He recommends these corrective measures:

1. Classify floor areas into three groups—classrooms, auxiliary rooms and service and structure area. Then compare the percentage for each with other schools.

2. Figure the costs per square foot for work done by the trades and compare with those for other schools.

You can measure improvement in income resulting from capital investment in a factory, store or office building and thus learn not to invest in facilities that do not pay off. But you can't measure the economical or educational improvement from added investment in a school building. How then can the school board and taxpayers determine whether they are getting their money's worth in a new school?

We are compelled to compare school construction costs not by what is produced in education value per dollar invested but by how the schools stack up against each other on the basis of cost per pupil, cost per classroom or cost per square foot. However, these costs are influenced by many factors. So even when you know the unit cost of your school is higher than another, it is not easy to find out why and to obtain the information needed to decide whether the school is worth the money.

An over-all unit of measurement that you may apply to evaluate the many variable elements comprising a school is meaningless, whether you use cost per pupil, per classroom or per square foot.

The total cost of a school must be broken down into parts—quite small parts—if you want to compare fairly and meaningfully the cost of one school with that of another.

Certain elements of cost must be removed from the comparison; they are not involved directly in construction costs. They include land costs, site development costs, design and consulting fees and movable equipment.

Also, costs must be adusted for changes resulting from construction at different times or in different locations of the buildings being compared. These adjustments can be made with a fair degree of accuracy with ENGINEERING NEWS-RECORD Building Cost Indexes.

After the adjusted total cost has been computed, a fair comparison can be made. This total depends on two major elements—size and quality. Size is easily measured by floor area in square feet, quality by a composite unit, which for convenience we call the cost per square foot. These two elements are totally unrelated. A reasonable cost analysis should treat them independently.

1. Area Comparisons

The greatest waste in school construction is in floor area. So a detailed study of space allotment to various functions is well worth while.

In comparing areas of different schools, you should consider the number of pupils using the area. (A national standard defining pupil capacity would be very helpful.) Comparisons should be based on area per pupil.

But there are different kinds of areas in a school and not all schools have the same kinds. It seems logical for cost studies to divide school space into three types of areas based on function to be served and somewhat related to the planning group controlling them:

1. Classrooms. Size within a fairly narrow range is nearly standardized. You could almost say that classroom area is determined by the number of pupils.

2. Auxiliary rooms. These would include gymnasiums, cafeterias, auditoriums, libraries, shops, music rooms, health units, remedial rooms, locker rooms and offices. These areas are set by the school superintendent and his staff.

3. Service and structure area. Included is everything needed to serve the school—corridors, toilets, stairs, storage rooms, boiler rooms and the areas occupied by building walls and columns.

I made an analysis of about a dozen Connecticut schools based on this three-way division of space. The schools differed widely in size and other characteristics. Half were elementary, half secondary schools. Here's what I found:

1. Classrooms. Areas per pupil were uniform, ranging from 25 to 30 sq ft per pupil for the elementary schools and from 30 to 35 sq ft per pupil for secondary schools.

2. Auxiliary rooms. There was a wide variation: 8 to 35 sq ft per pupil. Since the rooms were listed, it was easy to find the explanation. In the low range were schools without gymnasium, cafeteria or library, or without all three. The high-range schools had every facility. Where a school or a facility was built larger than needed for the immediate school population, this was readily apparent. In one case, an extra gym was built to serve a nearby school; the effect on the area per pupil was obvious.

3. Service and structure area. Since this area reflects the efficiency of the layout, the variation is alarming: 12 to 72 sq ft per pupil. Classroom and auxiliary-room areas combined ranged from 46% to 74% of the total, compared with a desirable norm of 65% to 75%. The significance of the variation observed is apparent when you consider that a difference of 10% is equivalent to a difference of $75,000 to $100,000 in the cost of an elementary school for 500 to 600 pupils.

What we need is space analysis figures of this kind for a large number of schools. Then an educator, school board or building committee could make a comparative study of a proposed school beginning with the first preliminary sketches.

2. Quality Comparisons

Consider now the factor of quality, measured by cost per square foot. Because a number of trades are involved, these costs are most conveniently grouped by trade or operation. Some of the most commonly used items of work are excavation, foundations, structure, interior partitions, exterior walls, finished floors, carpentry and millwork, painting, lath and plaster, and the mechanical trades—plumbing, heating, ventilating and electrical work.

The cost per square foot of each of these items is an understandable figure, compared with the total cost per square foot, which is a composite. For example, the cost per square foot of the heating and ventilating system considered alone gives us a measure of the effect on costs of different systems. We can then determine whether the prices are justified. We also can appraise the added cost of fluorescent lighting or vinyl tile floors or any other individual feature by a comparison of the cost per sq ft of the item alone.

It therefore seems desirable to adopt a uniform method of breaking down contractors' bids for requisition purposes—at least for schools. And these

Comparisons

breakdowns should be tabulated for cost studies. Such data would be invaluable to architects, engineers, educators and building committees.

If we had a cost-per-square-foot analysis by component parts for 100 schools, with a one or two-word description of those parts, we would be able to predict with a high degree of accuracy the cost per square foot of a proposed school from a brief outline specification.

The cost of design innovations also would be easier to measure.

With space and quality analyses available, covering the two basic elements representing the total cost, there is no reason why the cost of a school could not be planned in advance just as accurately as we plan the architecture or the structure or the mechanical parts. Providing the needed data is a task that architects, engineers and builders could undertake together to their great credit.

Measurement Standards Set For Building Area, Volume

New definitions, to cover both the "cube" and the "square" for measuring building size, have just been issued by the American Institute of Architects, Washington, D. C. This is AIA Document No. D-101, 1958 Edition, "The Architectural Area and Volume of Buildings." Single copies are free on request. In quantity, requests are filled at cost.

These standards for comparing costs of buildings are:

• **Architectural Area**—The architectural area of a building is the sum of the areas of the several floors of the building, including basements, mezzanine and intermediate floored tiers and penthouses of headroom height measured from the exterior faces of exterior walls or from the center line of walls separating buildings. Covered walkways, open roofed-over areas that are paved, porches and similar spaces shall have the architectural area multiplied by an area factor of 0.50. The architectural area does not include such features as pipe trenches, exterior terraces or steps, chimneys, roof overhangs, etc.

• **Architectural Volume**—The architectural volume (cube and cubage) of a building is the product of the total areas defined above and the height from the average depth of footings to finish floor, floor to floor, to the average height of the surface of the finished roof above, for the various parts of the building.

Beachland Elementary School (project C), Vero Beach, Florida. Architect: David V. Robison, Vero Beach, Florida. Contractor: Clutter Const. Corp., Miami Springs, Florida.

Rilco pitched beams, 36', 40', 56' long, spaced 10' o.c. Rilco western red Cedar Deck serves as ceiling, decoration and insulation.

"FINISHED COST IS SURPRISING-ECONOMICAL"

Contractor says: "Final appearance of these Rilco trusses gives the warm natural appearance of wood. We were very well satisfied with this method of construction. If you consider the finished product the cost is surprising . . . economical for such a finished product."

Architect agrees: "It has long been my thought that schools are too 'cold' and impersonal. Wood produces a warmth that reduces that feeling and lends itself to homier atmospheres. Rilco laminated beams and deck answered the problems and also permitted quick erection. They lend themselves to both beauty and function along with dollar savings. The results are satisfying."

Beauty plus function plus dollar savings — Rilco offers these and more. You complete the job faster with Rilco, for every member is precision-fabricated at the factory. Your regular crews erect Rilco trusses, arches, beams fast, saving you time and money. Clients like Rilco too, for these members are fire-safe, cannot corrode or rust, withstand temporary over-load or impact without damage.

Anywhere you build, build better for less—with Rilco. We can show you examples . . . write your nearest Rilco office—no obligation, of course.

RILCO works wonders with wood

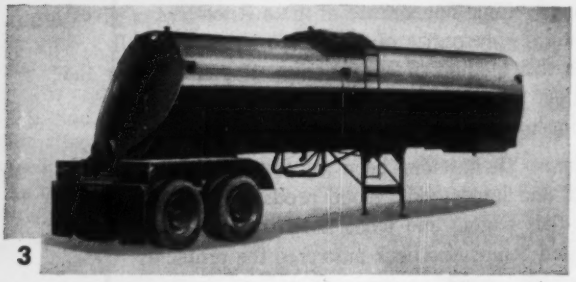
RILCO LAMINATED PRODUCTS, INC.
W801 First National Bank Building
St. Paul 1, Minnesota

DISTRICT OFFICES: Tacoma, Wash. • Fort Wayne, Ind. • Newark, N. J.

All The Hauling Equipment You

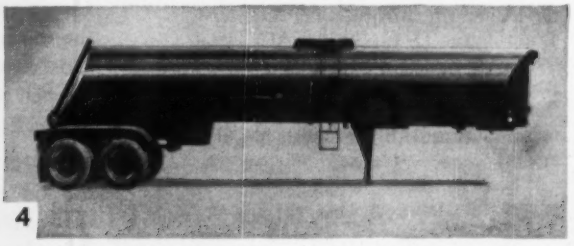
1

New cable dumps—Designed to resist shock loads and minimize vibration, the latest Fruehauf-Schonrock Cable Dump remains the lowest cost, most economically maintained sand, gravel, and dirt carrier in the business. A semi does the work of a hoist combination, without costly hoist mechanisms. It pulls itself or tractor from ruts, operates in tight quarters with tractor turned up to 90° from Trailer.



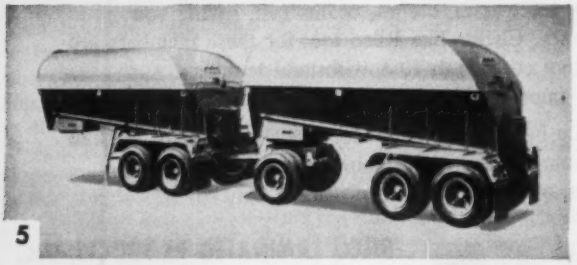
3

Aluminum hot commodity tanks—8700 pounds complete is the light, light weight of an all aluminum 6400 gallon Fruehauf asphalt tank insulated and equipped for 400° temperatures. Exclusive Fruehauf automatic welding processes are typical of the advanced, unmatched quality of Fruehauf tanks.



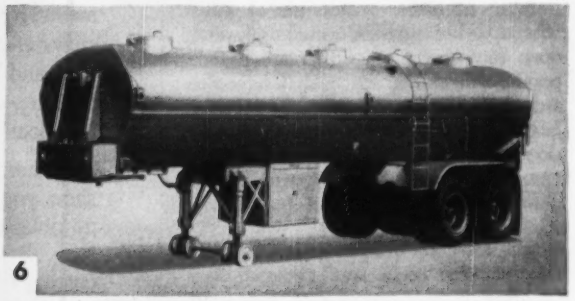
4

Steel hot commodity tanks—Fully insulated hot asphalt tanks with steel frames and steel or aluminum jackets can be equipped for even temperatures up to 400° and with a wide range of optional features. Units in a wide range of capacities are kept in stock for immediate delivery.



5

Airslide* bulk cement tanks—Fruehauf Airslide units are adaptable to both semi and train operation. Initial cost and maintenance are low because of the mechanical simplicity. Gravity does most of the discharge work with the aid of air blown through angled fabric panels. *(*Airslide—Trademark, Fuller Co.)*

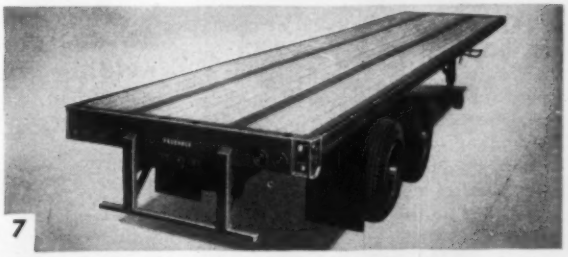


6

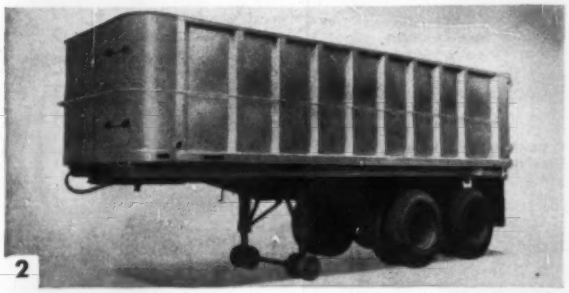
Screw type bulk cement tanks—Up to 10% *extra* bulk cement can be hauled in Fruehauf's new "Twin and a half" screw-type Bulk Cement Trailer because of its drop-frame construction. Discharge is rapid, cost and upkeep economical, because material is moved by twin front screws and a single rear screw.

Need For Any Construction Job!

The Trailers designed for the biggest payloads are all Fruehaufs

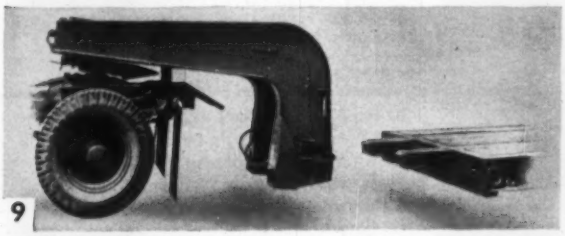


New lightweight platforms—Lighter by up to 1200 pounds than previous steel platforms, the new heavy duty Fruehauf Workhorse utilizes 19½" deep steel I beams as direct supporting members for lift trucks and loads, has full width I beam cross-members for added structural strength.



New hoist dumps—Front-mounted hydraulic telescopic hoist dumps are designed by Fruehauf in capacities up to 13 cubic yards of sand or gravel, 25 of rock. Tandem units feature the "no-hop" P2 underconstruction, deep I beam frame members, 21′, 22′, 24′, and 26′ bodies, several chassis lengths, and ICC lights.

Low cost multi-purpose platforms—Quality features at low, low prices distinguish this husky, all purpose flat bed, which is ideal for hauling heavy builders' materials, light machinery, and bulky installations. Single and tandem axle units are available, from 27′ to 42′ long.



Winchless removable gooseneck carryalls—No hydraulic assists or winches are required on these Fruehauf carryalls in capacities up to 50 tons! Front end loading and unloading of huge shovels is reduced to minutes, and coupling or uncoupling is easily handled by a driver, without shock to loads.

Single and double drop carryalls—Fruehauf builds the world's huskiest line of carryalls of all types in a full range of capacities. Single and double drop units for loads of 25 to 75 tons are always ready for quick delivery and specials for larger tonnages are designed to your specifications.

A Full Line Of Moneymaking Fruehauf Construction Trailers—
One For Every Kind Of Job—Ready For Immediate Delivery When Needed!

FRUEHAUF TRAILERS

World's Largest Builder of Truck-Trailers

FRUEHAUF TRAILER COMPANY

10949 Harper Avenue • Detroit 32, Michigan

PLEASE SEND FURTHER DETAILS ON FRUEHAUF CONSTRUCTION UNITS CIRCLED:

1 2 3 4 5 6 7 8 9 10

NAME_____

COMPANY_____

ADDRESS_____

CITY_____ STATE_____

Steel Fastener Costs Compared

An analysis showing how high-strength bolt, rivet and welding costs vary with production rates

This study gives an edge to welding and bolts over rivets on the direct cost analysis, but does not allow for the many subsidiary advantages and disadvantages that accompany each of these methods of connecting structural steel.

For example, welding permits economies in steel design that are not corrected for in this analysis. It also requires that fitting up bolts be tighter, that plumbing up costs are higher. No allowance covers this.

High strength bolts now must match rivets in size and number, though studies now underway may reduce the ratio of bolts to rivets. This may reduce either the size or the number required or both. Bolting is much faster, saves time and reduces overhead. The lowest price quoted for bolts was 46.74¢, which is 0.9¢ lower than the price used in this cost analysis.

Productivity, units per crew hour or per man hour, is the key to the relative advantage. Welding has low labor and material cost, high equipment cost. Bolts have low labor and machine cost, high material cost. Rivets have low material and equipment and high labor cost.

A consensus of experts gives these as average production rates per crew per day:

	Pieces per Crew Day	Piece	Cost per Piece
Rivets	288	rivet	$0.713
High Strength Bolts	400	bolt	0.700
Welding	40 ft ¼"	4" of ¼"	0.650

Assumed conditions for estimate:

Office Building with steel frame, requires 10,000 tons of steel

Fasteners:	Number per ton of steel	Size
Rivets	15	⅞" x 4¾"
HS Bolts	15	⅞" x 4¾"
Welding	5 ft of ¼"	4" = 1 rivet

Crews:	Direct	Support
Rivets	12 crews 4 men each	1 compressor, 1 operator 3 helpers
HS Bolts	8 crews 2 men each	1 compressor, 1 operator 2 helpers
Welding	9 crews 1 welder each	9 welding machines, 3 operators 6 helpers

Material Cost:

Rivets	each	14¢
HS Bolts	bolt & nut each	39.73¢
	washer, each need two	3.95¢
Welding	4" of ¼" weld, each	1.5¢

Rivets: Cost to Furnish and Place

Production rate per crew per day	Pcs per crew hour	Pcs per man hour	Labor cost per piece: direct[1] ¢	support[2] ¢	total ¢	Material cost/pc ¢	Total labor & material cost/pc	Compressor own & operate[3] cost/pc	Total incl equipment cost/pc
176	22	5.5	87.3	5.1	92.4	14	$1.064	$0.015	$1.079
256	32	8	60.0	3.5	63.5	14	0.775	0.010	0.785
288	**36**	**9**	**53.3**	**3.1**	**56.4**	**14**	**0.704**	**0.009**	**0.713**
352	44	11	43.6	2.5	46.1	14	0.601	0.007	0.608
384	48	12	40.0	2.3	42.3	14	0.563	0.007	0.570

[1]**Direct Labor:** Assume 12 crews at 4 men each
Wages $4/hr incl fringe benefits
Insurance $0.80/hr incl workman's compensation, public liability, property damage

[2]**Support Labor:** for 12 crews
1 compressor operator @ $4.80 (incl ins) $4.80
3 helpers @ 2.88 ea (incl ins) 8.64 $13.44

12 crews at 4 men ea = 48 men $13.44 ÷ 48 = 28¢/DMH

[3]**Equipment:** assume 365 cfm compressor @ $3.78/hr to own & operate
12 crews @ 4 men ea = 48 men $3.78 ÷ 48 = 8¢/DMH

High Strength Bolts: Cost to Furnish and Place

Production rate per crew per day	Pcs per crew hour	Pcs per man hour	Labor cost per piece: direct[1] ¢	support[2] ¢	total ¢	Material cost/pc: 9/2/58 bolt & nut ¢	two washer ¢	total ¢	Total labor & material cost/pc	Compressor own & operate[3] cost/pc	Total incl equipment cost/pc
224	28	14	34.3	4.7	39.0	39.73	7.90	47.63	$0.866	$0.011	$0.877
304	38	19	25.3	3.5	28.8	39.73	7.90	47.63	0.764	0.008	0.772
352	44	22	21.8	3.0	24.8	39.73	7.90	47.63	0.724	0.007	0.731
400	**50**	**25**	**19.2**	**2.6**	**21.8**	**39.73**	**7.90**	**47.63**	**0.694**	**0.006**	**0.700**
512	66	33	14.5	2.0	16.5	39.73	7.90	47.63	0.641	0.005	0.646
608	76	38	12.6	1.7	14.3	39.73	7.90	47.63	0.619	0.004	0.623

[1]**Direct Labor:** Assume 8 crews at 2 men each
Wages $4/hr incl fringe benefits
Insurance $0.80/hr incl workman's compensation, public liability, property damage

[2]**Support Labor:** for 8 crews
1 compressor operator @ $4.80 (incl ins) $4.80
2 helpers @ 2.88 ea (incl ins) 5.76 $10.56

8 crews @ 2 men ea = 16 $10.56 ÷ 16 = 66¢ direct MH

[3]**Equipment:** assume 210 cfm compressor @ $2.40/hr to own & operate
8 crews @ 2 men ea = 16 DM/hr $2.40 ÷ 16 = 15¢/DMH

Welding: Cost to Furnish and Place

Production rate per crew per day ft of ¼" Eq	Inches per crew hour	Rivet Equiv "pcs" @ 4"/rivet	Labor cost per piece: direct[1] ¢	support[2] ¢	total ¢	Material cost/pc ¢	Total labor & material cost/pc	Welding Machine own & operate[3] cost/pc	Total incl equipment cost/pc
24	36	9	53.3	39.1	92.4	1.5	$0.939	$0.13	$1.069
32	48	12	40.0	29.3	69.4	1.5	0.709	0.10	0.809
40	**60**	**15**	**32.0**	**23.5**	**55.5**	**1.5**	**0.570**	**0.08**	**0.650**
48	72	18	26.7	19.5	46.2	1.5	0.477	0.07	0.547
56	84	21	22.9	16.8	39.7	1.5	0.412	0.06	0.472

[1]**Direct Labor:** Assume 1 man/crew @ $4/hr + insurance at $0.80/hr

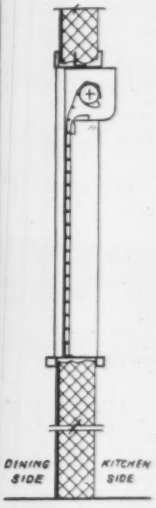
[2]**Support Labor:** for 9 crews
3 welding machine operators @ $4.80 ea (incl ins) $14.40
6 helpers @ 2.88 ea (incl ins) 17.28 $31.68

9 crews @ 1 man ea = 9 men $31.68 ÷ 9 = $3.52/DMH

[3]**Equipment:** assume 1 300 emp Welding Machine per Welder at $1.20/DMH to own & operate

Data for this analysis are available through the courtesy of George A. Saunders, consulting engineer, St. Petersburgh, Florida, and R. J. Richter, Builders Estimating Service, Inc., New York, N. Y.

for school and institutional use



PEELLE ROLLING ALUMINUM PASS WINDOW UNIT

Combined in the above completely assembled unit are a stainless steel frame, guides and a shutter of extruded aluminum flat-slats which rolls compactly into the head.

3 PEELLE PASS WINDOWS

...all with integral frames for easy installation

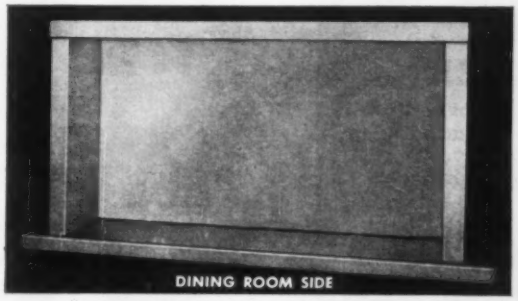
- **ARCHITECTS** specify Peelle Pass Windows to reduce specification and design time and to assure owner of a quality installation.
- **CONTRACTORS** like Peelle Pass Windows because they save estimating and buying time and eliminate duplication of installation—when frame is installed—panel is installed.
- **OWNERS** like Peelle Pass Windows because they give maintenance-free, EASY operation. Quality design and workmanship permit easy cleaning with no cracks and crevices to act as dirt catchers.

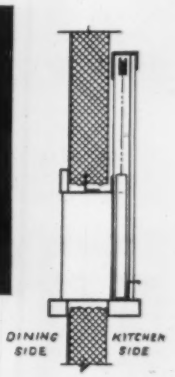
These desirable features account for the wide-spread use of Peelle Pass Windows in so many carefully planned school and institutional dining rooms and cafeterias. The three basic window designs shown at the right, allow great flexibility of choice in planning service access between kitchen and dining room.

Send for complete details on all 3 Peelle Pass Windows

PR ENGINEERED FOR THE BUILDING INDUSTRY
PEELLE-RICHMOND PRODUCTS

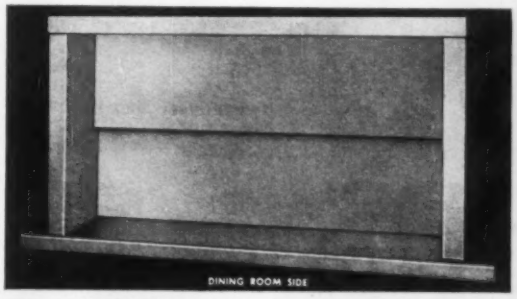
THE PEELLE COMPANY
47 Stewart Avenue, BROOKLYN 37, N. Y.
4037 N. Kedzie Ave., CHICAGO 18, ILL.
34 South 17th St., PHILADELPHIA 3, PA.
OFFICES IN PRINCIPAL CITIES

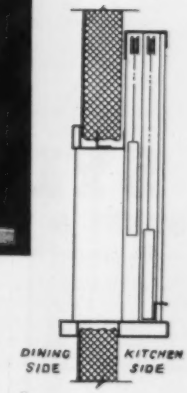




PEELLE ORIGINAL PASS WINDOW UNIT

The above completely assembled unit consists of a hollow metal door with steel guides and frame, designed for quick, economical installation. Special extended sills furnished when specified.





PEELLE *TELCO* PASS WINDOW UNIT

The Telco pass window is designed for low overhead conditions. The two vertical rising panels are arranged so that both leaves arrive at fully open or closed position simultaneously.

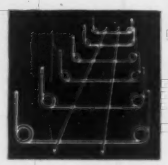
"ON THE JOB WHEN YOU WANT THEM!"

SYLGAB

STEEL and WIRE ACCESSORIES for Fast

FIREPROOFING

of Structural Steel



RIGID BEAM CLIP

5' lengths — installed with lightning speed. Made of #12 or #10 gauge galvanized.

★

HAUNCH STIFFENER

for beams over 16" deep. Made of #10 or #12 gauge galvanized wire.

★

TOGGLE HANGERS

More rigid than any wire. Used in conjunction with

SYLGAB SNAP-ON HAIRPIN CLIP

to tie main and cross furring together.

★

Sylgab Steel & Wire Accessories conform to the specifications of the Concrete Reinforcing Steel Institute. •

Quality — Service
Ease of Installation

SYLGAB

STEEL & WIRE CORP.

79-05 Cooper Ave., B'klyn 27, N. Y.

BEAM CLIPS • SPECIAL COLUMN CLIPS
EXPANSIBLE CLIPS
STRAIGHT AND COIL WIRE
HAIRPIN CLIPS • TOGGLE HANGERS
FORM SPACERS • BAR ACCESSORIES

Request Catalog—Phone or Wire Collect

Rippers Cut Costs by a Third

This claim for major cost reduction in breaking up hard masses for earthmoving is supported by the examples cited from a talk by R. D. Evans, staff consultant, Sales Development Division, Caterpillar Tractor Co., at the national convention of the Society of Automotive Engineers in Los Angeles, September 11-14. The two cost comparisons are with drilling and blasting hard material 1. under average conditions and 2. where hard frost prevails.

No two ripping jobs are exactly alike and material must be "rippable." This includes sedimentary rock such as limestone, and disintegrated or weathered solid formations such as granite. Moisture aids ripping by preventing bonding between hard rock laminations but it is a hindrance in some clay, sandstone and limestone formations.

End use, whether material is to be graded, fill or waste, governs the ripping pattern. On graded material to be crushed or sized the pattern must be varied accordingly. Fill must be broken sufficiently to meet maximum size in the specification. Waste need be loosened only enough for easy handling.

Space between passes depends on desired size. If full depth can be used, three to five feet is usually satisfactory. In crumbly material, six to eight foot spacing is adequate.

How ripping costs compare with drilling and blasting is shown below.

Rippers vs. Blasting: Cost to Break Up Hard Material

Conditions: Average

Method:		**Ripper**		**Drilling & Blasting**	
Equipment:		320 HP diesel tractor with ripper and dozer		1 600 cfm compressor 2 3-in. wagon drills 1 125 cfm compressor 1 jackhammer	
Capacity:		300–600 cu yd/hr			
Assume for this study:		100 cu yd/hr			100 cu yd/hr
List price of equipment:		$53,000			$28,000
Hourly cost:		$/hr	$/hr	$/hr	$/hr
To Own	Depreciation	6.62		2.80	
	Int, Ins, Taxes	1.59	8.21	0.84	3.64
To operate:	Fuel	1.68		1.25	
	Gas	0.03		0.03	
	Oil & Filters	0.32		0.35	
	Repairs, incl labor	6.62	8.65	3.00	4.63
Labor: 1 operator		2.50		3 drillers 7.50	
				1 pdr man 3.00	
			2.50	1 helper 2.00	12.50
Total: (100 cu yds)			$19.36		$20.77
Cost/cu yd of powder: (assume ½lb/cu yd at $18.70/cwt) =					0.10
Total cost/cu yd:		$\frac{\$19.36}{100} = 19.4¢$		$\frac{\$20.77}{100} = 20.8 + 10 = 30.8¢$	

Rippers vs. Blasting: Cost to Break Up Hard Frost Area

Data Supplied by: A Mesabi Range Iron Ore Mining Co.

Area: Level surface, 180 ft x 45 ft, 8,100 sq ft

Material: Clayey, sandy, boulder strewn frost, imbedded boulders up to one yard diameter "very tough going"

		Drilling & Blasting		**Ripping**	
Method:		small diameter, self-propelled, crawler mounted, air powered drill		D9 tractor and ripper, 4 initial, 1 cross ripping pass, doze off 1st layer, repeat once	
Hole spacing:		6ft x 5ft = 30 × 9 = 270 holes at 5ft			
Shift:		8 hrs gross		"Conservatively"	
Production:			50 holes per shift 5.4 shifts required	14 hrs to rip 8,100 sq ft area	
Labor:		Shifts			
	Driller 2nd	5.4 @ $19.20	$103.68	Tractor operator	
	Helper	5.4 @ 18.16	98.06	14 hrs at $2.445	$34.23
	Blaster	1.0 @ 20.24	20.24		
	Helper	1.0 @ 17.12	17.12		
			$239.10		
Explosives required:			$345.00		
Machine expenses:					
5.4 × 8 = 43 hrs Air-Trac drill, 43 hrs @ $3.35 =			144.05	D9 & ripper, incl repair & maint 14 hrs @ $21.00	294.00
Total:			$728.15		$328.23

Missile Bases for St. Louis Defense Area

Buildings for missile assembly, electrical generating equipment, personnel and underground storage facilities were bid in a lump sum; utilities in unit prices

NIKE antiaircraft missile installations to be built at four special AAA sites in the St. Louis defense area for the Corps of Engineers, Chicago Army District, went to these contractors:

Contractor, Site & Location	Amount	% over engrs. est.
M.H. Wolfe & Co. and J.J. Altman & Co., E. St. Louis, Ill.		
Site SL 10, Marine, Ill	$1,698,003	2.9
Fruin-Colnan Contr. Co., St. Louis Mo.		
Site SL 40, Hecker, Ill	1,660,836	3.1
SL 60, Pacific, Mo	1,774,688	0.7
SL 90, Pere Marquette State Park, Ill	1,937,326	14.5
Project total	$7,070,853	5.3

Warren & Van Praag, Inc., architect-engineer, Decatur, Ill., is the consultant.

In addition to other work, required installations at each site include: three underground missile storage structures, two generator buildings, a ready building, interconnecting corridor and missile assembly building.

At Site SL-10, wet box underground storage structures are required, and those at Site SL-60 call for rock formation.

The government furnishes hydraulic elevators and insert kits for all missile storage structures; also seven 400-cycle frequency changers and six diesel-driven generators per site.

Rail and truck transportation is available to the site.

Class AA concrete for hydraulic structures is 3,750 psi compressive strength in 28 days.

Minimum wages on the job include: carpenters, $3.50; crane and shovel operators, $3.80; tractor operators, $3.70; pipe layers, $4.00; electricians, $3.83; common laborers, $2.30.

The bidding went like this:

Site SL 10

1C	M.H. Wolfe & Co. and J.J. Altman & Co., E. St. Louis, Ill.	$1,698,003
2	Mayfair Constr. Co., Chicago	1,771,480
6	Alport Constr. Co., St. Louis	1,983,011
EE	U.S. Army Engr Corps, Chicago	1,649,480

Site SL 40

1C	Fruin-Colnan Contr. Co., St. Louis	$1,660,836
2	Mayfair Constr. Co., Chicago	1,662,804
6	Millstone Constr., Inc., St. Louis County Mo.	1,972,567
EE	U.S. Army Engr Corps, Chicago	1,610,165

Site SL 60

1C	Fruin-Colnan Contr. Co., St. Louis	$1,774,688
2	Alport Constr. Co., St. Louis	1,982,196
5	Frazier-Davis Constr. Co., St. Louis	2,340,408
EE	U.S. Army Engr Corps, Chicago	1,782,743

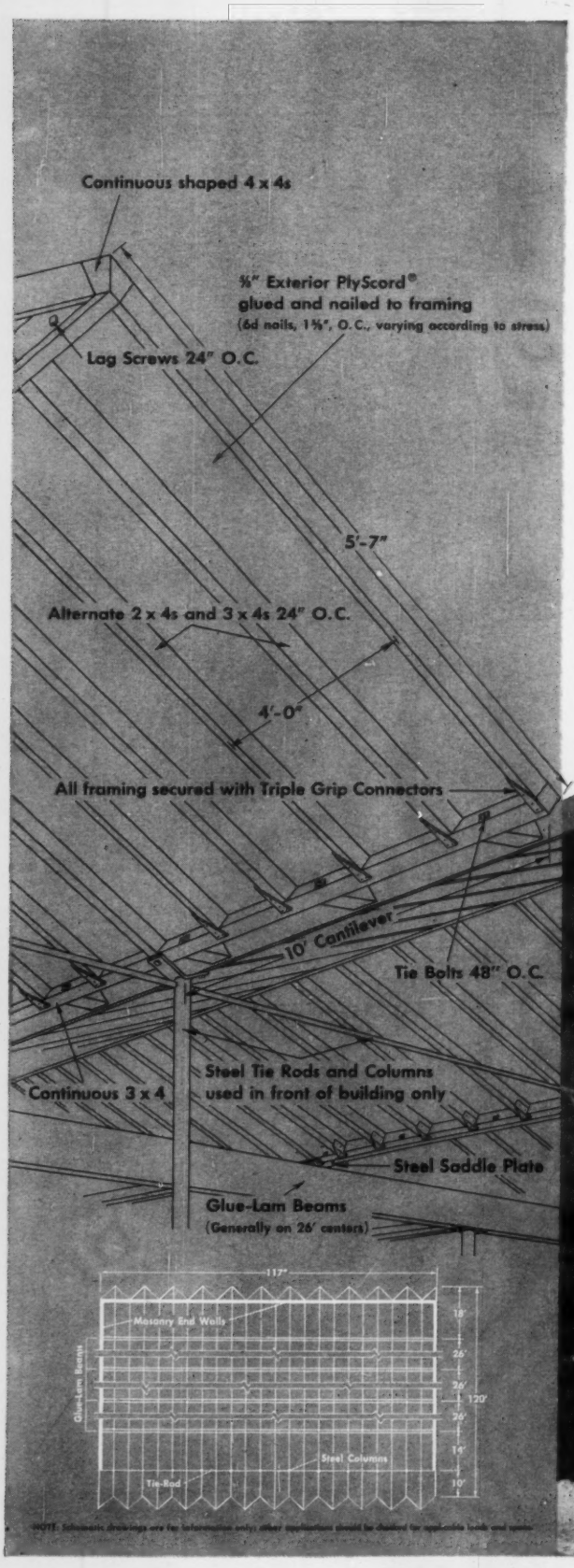
Site SL 90

1C	Fruin-Colnan Contr. Co., St. Louis	$1,937,326
2	Alport Constr. Co., St. Louis	2,028,677
4	M.H. Wolfe & Co. and J.J. Altman & Co. E. St. Louis, Ill.	2,146,074
EE	U.S. Army Engr Corps, Chicago	1,692,100

Bids: 6-24-58		SL-10		SL-40		SL-60		SL-90	
Items	Unit	Quantity	Unit Prices 1C	Quantity	Unit Prices 1C	Quantity	Unit Prices 1C	Quantity	Unit Prices 1C
Underground missile storage, and structures*	ls	job	$1,156,060	job	$1,060,022	job	$1,106,317	job	$1,113,774
Conc pave & pads, other than 4"	ls	job	54,708	job	55,577	job	43,730	job	49,075
walks, 4"	sy	1,040	5.07	1,102	6.46	1,020	6.55	1,020	6.34
Water wells, 1	ls							job	8,870
2	ls	job	16,000	job	35,238	job	31,730		
Exc, unclassified	ls	job	46,072	job	52,907	job	92,175	job	109,728
Pipe culvert, 8"	lf							16	5.76
10"	lf					38	6.00	36	5.76
12"	lf	30	5.45			38	6.00	170	5.76
15"	lf	160	6.00			162	6.75		
18"	lf	36	6.90			130	7.60	308	9.79
21"	lf							168	7.37
24"	lf							224	8.29
30"	lf			98	10.57				
CMP arch, 38x22"	lf	50	10.54						
22x13"	lf	44	6.54			40	9.15		
18x11"	lf	42	5.36						
29x18"	lf			100	10.57				
RC inlets, compl w grates, tp A	ea	3	267.00	3	205.33			2	202.00
tp B	ea			2	411.00			2	403.00
for 36x22" CMP arch	ea	1	166.00						
Headwall, compl w grates, 8" pipe	ea			5	293.60	6	300.00		
15" pipe	ea	1	168.00						
8 & 12" pipe	ea							3	288.00
Storm drain, CMP, 6"	lf	263	3.83						
12"	lf							126	7.20
VCP, 4"	lf	70	2.28	70	3.52	125	3.55	74	3.46
6"	lf	68	2.53	50	3.80	60	3.85		
8"	lf	69	3.18	112	7.63	100	7.75	89	7.39
10"	lf			157	8.82				
12"	lf							53	9.22
15"	lf	57	5.87	100	10.57				
CMP, 6" perf	lf					146	3.55		
riprap	sy	12	17.00			16	7.50		
CIP, 4"	lf			4	8.50			161	5.76
6"	lf					30	8.30	35	3.57
paved ditches	lf			44	8.86				
Grse interceptor, san sew syst	ea	1	1,060	3,075	3.65	2,588	3.70	1,475	8.06
				1	641.00	1	650.00	1	691.00
Sewage Disposal System									
w/Imhoff tank & intermit sand filt	ls	job	48,734a	job	33,736a	job	38,584a	job	29,928e
w/septic tank & subsurf sand filt	ls	job	11,493b	job	7,904b	job	7,938b	job	8,313d
MH, std 5' deep	ea	6	330.00	9	940.00	16	360.00	9	922.00
wall, over 5' depth	lf	36	35.95	18	62.22	7	62.50	7	61.00
VCP, 6"	lf	435	2.96	355	4.11	255	4.15	271	4.03
8"	lf	1,023	4.04	1,565	7.64	3,498	8.50	2,034	7.49
CIP, 6"	lf	108	4.14						
Conc encasement, 8" VCP	lf	29	6.20	29	2.93	29	2.95	29	5.73
Water Distribution System									
Galv stl pipe, ¾"	lf	26	2.20	50	1.34	22	1.35	16	1.44
1¼"	lf	30	2.42			42	1.89	8	2.02
1½"	lf	5	2.95	45	2.33			20	2.53
2"	lf	927	3.08	980	2.67	678	2.68	440	2.88
2½"	lf							75	3.46
CIP, 3"	lf	1,597	4.40	1,295	4.40	769	4.42	1,500	4.72
4"	lf	370	4.95	160	4.70	1,698	4.72	1,043	5.07
6"	lf	180	6.60	570	5.87	610	7.08		
Gate valv & box, 3"	ea	9	79.00	9	58.66	5	59.00	9	63.00
4"	ea	1	93.00	1	67.00	1	67.30	1	71.00
6"	ea	2	114.00	1	82.00	2	88.60		
Ground serv stop & box, ¾"	ea	3	37.00	4	10.50	2	11.65	3	12.00
1¼"	ea	1	41.00			1	13.00	1	14.00
1½"	ea	1	42.00						
2"	ea	6	50.00	5	27.00	8	27.15	3	29.00
Pressure regulating vault	ea					1	708.00		
Water transmission line, well to house area	ls							job	63,936
launch area to control area	ls							job	35,654
Road & Parking Area									
Bit conc surf crse	sy	19,866	1.65	25,010	1.14	24,045	1.04	19,633	1.38
base crse, 12½"	sy			520	2.94	17,150	3.08		
13½"	sy	20,820	3.90	7,165	3.08	8,170	3.30		
16½"	sy			18,785	3.31			7,426	5.18
17½"	sy							12,911	5.47
Edge drains w/perf CMP	lf	470	3.78	674	3.88	672	2.36	1,226	3.80
Gravel surface, 8"	sy	464	2.00	609	2.05	918	2.06	9,607	1.44
Seed, fertilize, mulch	ac	20.41	470.00	11	411.27	13.3	568.00	10	403.00
Landscaping	ls	job	6,970	job	5,346	job	5,050	job	2,051
salvage & replant	ls					job	5,900	job	13,075
Fence, chain link, 7'	lf	1,596	4.27	1,662	2.93	1,640	2.94	4,051	2.87
6'	lf	6,840	3.39	7,473	2.69	9,256	2.70	5,735	2.64
Gates for high fence, 6'	lf	52	17.52	40	10.57	20	10.65	40	10.37
7'	lf	12	75.00	12	28.16	40	28.30	32	27.65

(Unit Prices continued on page 88)

New low-cost covers



YEAKEL-POWELL BUILDING
LOCATION: Burien, Wash.
ARCHITECT: Jack N. Bryant, A.I.A.
STRUCTURAL ENGINEER: Harvey H. Johnson
CONTRACTOR: Powell Construction Co.

fir plywood folded plate roof 14,000 sq. ft. in only 9 hours

Fabricated on the job with common labor, new roofing system costs 10-20% less than conventional construction—provides attractive appearance, superior structural values.

THIS PRECISELY ENGINEERED folded plate roof—the first of its kind using lumber-framed plywood sections in series—offers several unique advantages:

Low cost and fast job-site assembly using common labor. Plywood components were installed by a 6-man crew in less than nine hours. Total costs, including all labor and materials, came to less than 80c per square foot—a figure some 10 to 20 percent less, locally, than joist or truss construction accomplishing the same clear floor area.

Structural simplicity. The roof consists of 11 plywood folded plates which rest on four glue-lam beams. Each of the inclined planes is a rigid plywood diaphragm, paired to form a giant self-supporting inverted V-beam which spans 10 feet from valley to valley and 26 feet from beam to beam. Posts, trusses and purlins are eliminated and the architect estimates that spans could be almost doubled where called for by the design.

Design adaptability. The plywood folded plate system provides large, clear floor areas and freedom in arranging—or rearranging—interior partitions. The folded plate creates an unusually attractive profile, with bays defining individual store areas.

FOR INFORMATION about fir plywood folded plate construction or other data—write

DOUGLAS FIR PLYWOOD ASSOCIATION

TACOMA 2, WASHINGTON

—an industry-wide organization devoted to research, promotion and quality control

Always specify by DFPA grade-trademarks

DFPA TESTED QUALITY

Fir plywood folded plate components were built on ground, crane-lifted into position in pairs. Heaviest lift was about 1,000 lbs. Contractor was impressed with the ease with which his crew assembled and erected sections.

The folded plate provides distinctive profile, freedom in placement of interior partitions. The front was given a 10' overhang to cover store entrances. Underside was covered with medium density overlaid plywood to provide smooth, check-free paint base.

. . . NIKE bases for St. Louis area

Bids: 6-24-58 Items	Unit	SL 10 Quantity	SL 10 Unit Prices 1C	SL-40 Quantity	SL-40 Unit Prices 1C	SL-80 Quantity	SL-80 Unit Prices 1C	SL-90 Quantity	SL-90 Unit Prices 1C
Steps for conc walks	ls	job	$32.00	job	1,340	job	1,470	job	1,738
Electric distribution	ls	job	99,669	job	123,584	job	141,600	job	151,142
Government field office furnished elevators & hatchway doors, excl of related metal items	ls	job	4,500	job	1,762	job	1,534	job	4,728
	uhi	job	37,500	job	68,150	job	68,440	job	66,816
Conc curb	lf	612	5.14	588	2.94	615	2.95	520	3.46
Guard posts	ea	.....	.....	49	9.73	66	18.90	95	9.55
Water well pump 7 threshold treatment bldg	ls	.....	.....	.....	.....	.....	.....	job	20,160

a Housing and control area & haul to site & instal b Launching area c Housing & launching area d Control area uhi unload

* Includes generator buildings, ready buildings, interconnecting corridor, missile assembly building, three sentry buildings' water treatment pump and storage buildings, paint and oil storage buildings, barracks, mess hall, administration, recreation and storage buildings, and miscellaneous sheds and pits, radar towers, bore mast base and anchors

Commence 15 days after notice. Complete: 15 May 59 intermediate; 14 Aug. 59 final. Liquidated damages, $1,500 day intermediate; $50 /day final.

$1.8 Million for Air Base Utilities

Glasgow, Mont. contracts include high temperature water system, jet fueling facilities and electric substations

Three awards for utilities at the Glasgow Air Force Base, Glasgow, Mont., by the Corps of Engineers, Walla Walla, Wash., went to two contractors for:

	Contract	% of Contract	% chge from engrs est
To The Bay Co., Tacoma, Wash.			
High temperature water system	$599,036	33.7	− 3.6
Hydrant fuel, jet	810,741	45.6	+16.7
To Northwestern Engrg Co Rapid City, S.D.			
General utilities (water, drain, sewer, electric)	367,867	20.7	− 2.1
Total	$1,777,644	100.0	+ 5.0

The high temperature water system includes a 30,000,000 btu boiler at $193,500; also 9,070 ft of underground 1½ to 8 in. conduit at prices ranging from $7.25 to $33.90 per lin ft.

The jet fueling facilities include a bulk storage tank, three pumphouses, fuel pits, and 10,330 lin ft of fuel pipe at $5.10 to $22.00 per lin ft.

The general utilities include two electric substations and an electric switching station, besides 9,090 ft of water mains and 7,300 ft of sanitary sewers:

Schedule A—High Temperature Water System

1C The Bay Co., Tacoma, Wash $599,036
2 Detweilers, Inc., Twin Falls, Idaho 663,327
EE Corps of Engineers, Walla Walla, Wash 621,544

Bids: 6-10-58 Items	Unit	Quantity	Unit Prices 1C	2
Boiler plant addition	ls	job	$193,500	$210,743
Undergr conduit, 8" S&R	lf	5,070	33.90	40.83
6" S&R	lf	1,830	29.30	30.10
4" S&R	lf	630	20.65	23.26
3" S&R	lf	160	15.60	18.05
2½" S&R	lf	120	13.00	15.55
2" S&R	lf	260	9.00	13.75
1½" S&R	lf	1,000	7.25	13.10
Manhole, #15	ea	1	3,623	5,452
#16	ea	1	5,151	6,867
#17	ea	1	5,151	6,867
#18	ea	1	5,141	8,468
Valve box #19	ea	1	2,700	2,587
Manhole, #20	ea	1	4,914	6,530
#21	ea	1	3,128	3,944
#22	ea	1	4,455	5,707
#23	ea	1	3,190	4,454
#24	ea	1	3,056	4,483
#11-C	ea	1	2,608	2,088
type A	ea	1	1,777	2,598
B	ea	1	1,722	3,451
Expansn loop, #100-111, inc	ea	12	4,182	3,412
#112	ea	1	4,615	3,704
#113&114	ea	2	5,323	3,503
#115-117, inc	ea	3	2,839	2,378
#118	ea	1	2,438	1,955
#119	ea	1	2,900	2,378
#120-121	ea	2	3,074	2,523
#122-123	ea	2	1,627	1,287
XL-1	ea	1	414.00	365.00
XL-2	ea	1	631.00	452.00
XL-3	ea	1	872.00	713.00
XL-4	ea	1	697.00	603.00
XL-5	ea	1	620.00	540.00
XL-6	ea	1	379.00	342.00
XL-7	ea	1	420.00	377.00
OQ-XL-1	ea	1	414.00	365.00
OQ-XL-2	ea	1	414.00	365.00
Z-bend, #Z-1	ea	1	4,161	2,861
L bend, #L-1	ea	1	$709.00	$632.00
#L-2	ea	1	629.00	565.00
#L-3	ea	1	3,607	2,409
Expansion bend, XB-1	ea	1	323.00	250.00
XB-2	ea	1	367.00	1,902
XB-3	ea	1	255.00	263.00
XB-4	ea	1	291.00	263.00
XB-5	ea	1	325.00	263.00
XB-1 OQ	ea	1	235.00	261.00
XB-2 OQ	ea	1	252.00	261.00
XB-3 OQ	ea	1	219.00	233.00
Conn to exist MH #9	ls	job	1,017	1,520
#11	ls	job	463.00	1,173
#13	ls	job	364.00	3,195

Schedule B—Jet Fueling Facilities

1C The Bay Co., Tacoma, Wash $810,741
2 Larsen & Co., Salt Lake City, Utah 970,321
EE Corps of Engineers, Walla Walla, Wash 895,014

Bids: 6-10-58 Items	Unit	Quantity	Unit Prices 1C	2
Bulk storage tank	ea	1	$42,475	$54,022
Dike and dike enclosure	ls	job	6,980	14,534
Jet fuel transfer pumphse	ea	1	38,925	36,444
Operating stor pumphse, #1 & 3	ea	2	205,895	252,278
Lateral control pit	ea	6	13,584	11,236
Hydrant outlet	ea	12	1,250	1,059
Drain pit, remov exist at exist unloading header	ea	1	500.00	629.59
2 conns, refuel & defuel header	ea	2	1,270	1,228
1 conn, fuel transf line at unload header	ea	3	976.00	851.44
	ea	2	781.00	851.43
Vent pit, fuel transfer line	ea	2	1,205	799.80
Fuel pipe, underground, 10"	lf	210	16.55	26.10
8"	lf	8,000	8.40	9.02
6"	lf	50	22.00	20.53
4"	lf	660	6.15	5.98
3"	lf	700	5.10	4.51
above ground, 8"	lf	430	10.00	9.93
6"	lf	280	6.30	9.62
Valve pit, #1	ea	1	$1,531	$1,492
#2	ea	1	4,182	3,322
#3	ea	1	6,957	1,471
#4	ea	1	1,528	1,952
Truck unloading connection existing unloading header	ea	6	745.00	884.92
new unloading header	ea	10	818.00	1,187
Pipe support	ea	31	90.00	182.93
Copper water serv pipe, ¾"	lf	180	3.08	4.62

(Unit prices continued p. 91)

GILSULATE DISTRIBUTORS

Ask for a demonstration of GILSULATE's unique properties

ALABAMA
Palmer & Lawrence, 3110 Clairmont Ave. So., P.O. Box 1572, Birmingham

ARIZONA
Carns-Hoaglund Company, 420 N. 15th Avenue, Phoenix

CALIFORNIA
Industrial Insulators, Emeryville & Los Angeles

COLORADO
Joy and Cox, Inc., 2124 Broadway, Denver 2

CONNECTICUT
A. F. Hinrichsen, Inc., P.O. Box 446, Stratford

FLORIDA
George A. Israel, Jr., Jacksonville, Miami & Tampa
Manufacturer's Sales Co., 1826 No. Pace Blvd., Pensacola

GEORGIA
John A. Dodd Co., 299 Techwood Drive, N.W., Atlanta

ILLINOIS
Eagle Industrial Co., Inc., 1021 N. 18th St., E. St. Louis
Roy O. Nelson Company, 330 S. Wells St., Chicago 6

INDIANA
Jackson Engineering Co., Inc., Ft. Wayne, Indianapolis, Lowell & Terre Haute

IOWA
Allied Industries, Inc., 2727 Middle Rd., Davenport

KENTUCKY
Jackson Engineering Co., Inc., 660 S. 5th St., Louisville 2

LOUISIANA
Edgar Murray Supply Co., Inc., 232 Canal St., New Orleans 6

MARYLAND
Freemire & Associates, Inc., 2802 Ridgewood Ave., Baltimore 15

MASSACHUSETTS
Beaulieu and Munroe, 82 Crescent Avenue, Boston 25

MICHIGAN
John F. Wolff Company, 726 Lothrop, Detroit 2

MINNESOTA
Paul W. Abbott Co., Inc., 704 Vandalia St., St. Paul 14

MISSOURI
Anderson-Stolz Corp., 1727-33 Walnut St., Kansas City 8

NEW JERSEY
A. F. Hinrichsen, Inc., 9 Ampere Parkway, East Orange

NEW YORK
Ashley Equipment Corp., Albany–Saratoga Rd., Cohoes
H. V. Boggs Co., Inc., 419 E. Jefferson St., Syracuse 2
A. F. Hinrichsen, Inc., 50 Church Street, New York 7
J. B. Magee Assoc., 349 Franklin St., Buffalo 2

NORTH & SOUTH CAROLINA
Applied Engineering Co., Greensboro, N.C., & Orangeburg, S.C.

NORTH & SOUTH DAKOTA
Lignite Combustion Engineering Corp., 215 Airport Rd., Bismarck, N.D.

OHIO
William G. Jewett Co., 33697 Aurora Rd., Solon
The Henry P. Thompson Co., Cincinnati & Columbus

OKLAHOMA
Loeffler-Greene Supply Company, 1604 N.W. 5th, Oklahoma City

OREGON
Winsor Co., 20031 Marine View Drive S.W., Seattle 66, Washington

PENNSYLVANIA
Holly Specialties Co., Inc., Walnut & 63rd Streets, Philadelphia 39
J. F. Scouler Company, 2120 Market St., Camp Hill
Tutein Equipment Co., P. O. Box 4453, Pittsburgh 5

TENNESSEE
John M. Dooley & Assoc., 1832 McCalla Ave., Knoxville
Hurston-Conaway, Inc., 2470 Poplar Avenue, Memphis

TEXAS
J. R. Dowdell & Co., Austin, Corpus Christi, Dallas, Ft. Worth, Houston, Lubbock, San Antonio

UTAH
Williams, Gritton & Wilde, 204 Dooly Bldg., Salt Lake City

VIRGINIA
Shultz and James, Inc., 9 E. Cary St., Richmond 19

WASHINGTON
Winsor Co., 20031 Marine View Drive S.W., Seattle 66

CANADA
Banton Engineering Specialties, 360 Richmond Road, Ottawa, Ontario
Canwest Industrial Products, 1210–11th Ave., S.W., Calgary, Alberta
Engineering Equipment Co., Ltd., 874 Beaumont Ave., Montreal, Que.
Insul-Mastic Corporation, Ltd., 1400 Spruce St., Winnipeg, Manitoba
Perry Products Ltd., 586 West 6th Avenue, Vancouver 9, B. C.
Michael Stuart Co., Ltd., 102 Eglinton Ave. E., Toronto, Ontario

Underground hot pipes stay free from trouble...when you INSULATE WITH GILSULATE

One of the most difficult problems in designing underground hot piping systems is providing positive corrosion protection against electrolytic, chemical or galvanic attack. The answer lies in the use of GILSULATE. For, in addition to its excellent insulating properties, this naturally-occurring hydrocarbon is chemically neutral in all soils, dielectric, and moisture-proof and water-proof as well.

GILSULATE's low thermal conductivity, low cost and easy installation make it possible for schools, colleges, housing projects, hospitals, industrial plants and other institutions to install central heating with underground piping and to realize the savings in equipment and operating costs which such systems provide.

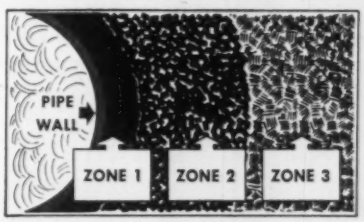
We'll help you with your plans

If you are planning to rehabilitate present piping, or to install a new underground hot piping system, call the nearest GILSULATE Distributor listed on the page opposite this advertisement. His own extensive experience in heating and air conditioning, plus the research, engineering and field supervision facilities of the American Gilsonite Company are at your disposal...without obligation. They will work with your engineers in checking specifications, unusual soil conditions, and actual installation to make sure that the finished job is completely satisfactory.

If you would like complete information on GILSULATE insulation, or would like to be put on the mailing list to regularly receive free copies of PIPE INSULATION NEWS, send your request to any of our offices.

GILSULATE IS EASY AND ECONOMICAL TO USE

GILSULATE completely frees you of the expensive, time-consuming preparation required by many insulating systems. You just pour it into the pipe trench, shovel-point it around the pipes, and tamp it. Pipe heat does the rest.



Heat fuses the GILSULATE to pipes and joints to form three zones: Zone 1, a flexible, heavy-duty water barrier; Zone 2, of firmly-cemented granular GILSULATE that provides excellent thermal insulation under wet or dry conditions; and Zone 3, which provides a final zone of thermal insulation and a support for the water-proof structure.

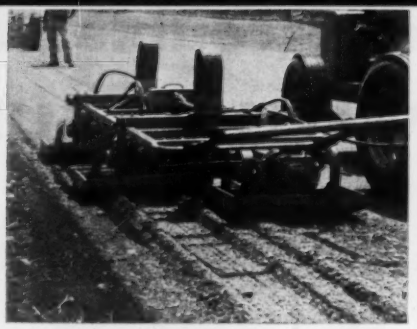
GILSULATE®

TRIPLE ZONE INSULATION
FOR UNDERGROUND HOT PIPES

AMERICAN GILSONITE COMPANY
Affiliate of Barber Oil Corp. & Standard Oil Co. of Calif.
134 West Broadway, Salt Lake City 1, Utah
3537 Lee Road, Cleveland 20, Ohio
Distributors in Principal Countries of the World

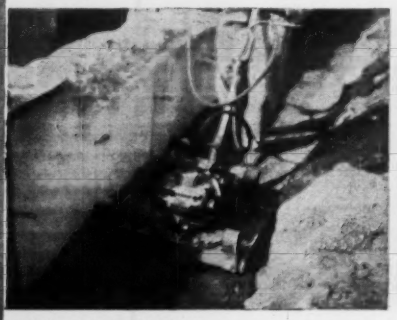
10 Leads *to better, faster results and BIGGER PROFITS!*

MACADAM DENSIFICATION. The Jackson Multiple Compactor gives you base and sub-base compaction at its quickest and best. Each of the 6 units in workhead delivers 4200 3-TON BLOWS per minute.



PAVEMENT WIDENING. Any arrangement desired of the vibratory units of the Jackson to fit the job most advantageously and provide 100% of required density in ONE PASS is easily and quickly made.

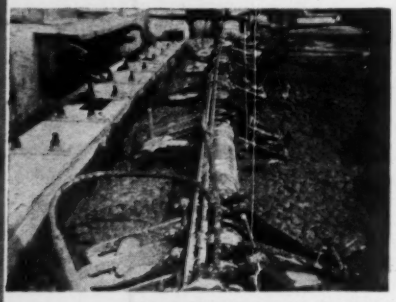
GRANULAR SOIL FILLS. The Multiple Compactor quickly achieves specified density, gets into places bigger, more expensive equipment cannot reach. Individual units can be detached, operated as manually guided compactors.

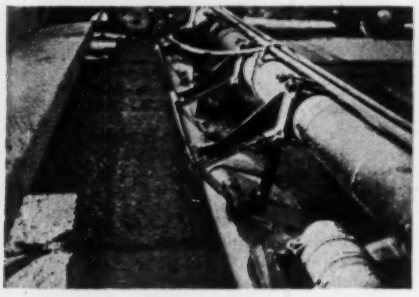


SOIL COMPACTION. Self-propelling, the Jackson Compactor, with 12" to 26" interchangeable bases, achieves specified density of granular soils in 6" to 8" layers at the rate of 600 sq. yds. per hr. Perfect for bridge and pipe line fills, concrete floor sub-bases and similar applications.

BLACKTOP WIDENING & PATCHING. The same machine operated from power plant on auto-trailer with pickup for Compactor is most efficient means of blacktop pavement patching, paving walks, drives, etc. Will compact up to 600 sq. yds. per hr close to maximum density.

TWIN-UNITS — ONE OPERATOR. With a two-unit, side-by-side or tandem hookup of JACKSON COMPACTORS, one man can readily do the work of two, since the compactors are self-propelling and he has only to guide them.





CONCRETE VIBRATION FOR HIGHWAY AND AIRPORT PAVING

INTERNAL TYPE; super-powered, gives full width internal vibration through full depth of very thick slabs. Saves time, cement; provides greater density and compressive strength.

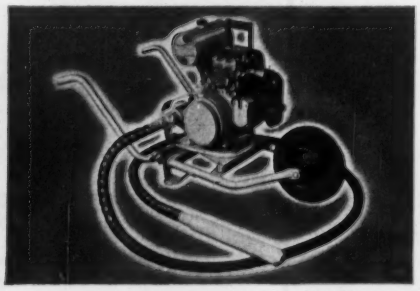
SURFACE TYPE; does perfect job of vibrating all mixes in depths used on highway projects. The owner of a JACKSON Paving Tube can quickly switch from internal to external vibration, or vice versa, at minimum expense.

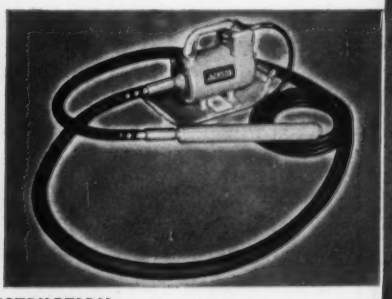
MUNICIPAL PAVING: This vibratory screed strikes off to all crowns, undercuts at curb or sideform, works right up to and around obstructions, is rolled back for second passes on 4 rollers. Most productive and convenient screed made.

JACKSON VIBRATORS, INC.

LUDINGTON, MICHIGAN

FOR SALE OR RENT AT YOUR JACKSON DISTRIBUTOR





GENERAL CONSTRUCTION

(Left); 6 H.P. engine-driven, flexible shaft vibrator. Excellent for both thin and thick sections. (Right); 2½ H.P. electric vibrator (for light-socket operation). Handy as a pocket in a shirt, powerful enough to handle all general construction concrete vibration with shafts up to 28'.

. . . Montana air base utilities

Bids: 6-10-58 Items	Unit	Quantity	Unit Prices 1C	2
Culvert, 15"	lf	44	5.50	12.17
12"	lf	123	4.85	7.07
Secondary elec distribution, bulk storage area	ls	job	5,730	8,610
operating storage area	ls	job	10,315	14,054
Fueling undergr elec distr & telephone signal system	ls	job	13,810	65,184
Dike drainage	ls	job	768.00	1,069
Excavation	cy	680	0.70	1.54
Embankment	cy	7,550	1.25	1.97
Base course	cy	1,140	5.00	9.20
Leveling course	cy	200	8.25	4.15
Surf crse, 1" cr minus	cy	230	8.25	9.00
1" cr minus, selct	cy	110	5.00	10.90
Prime coat	t	1	55.00	304.90
Asphaltic concrete pavemt	t	76	19.80	31.05
cement	t	4.6	53.00	94.99
Portland cement concrete	bbl	320	7.00	7.16
	cy	250	40.00	23.52
Security fence	lf	550	12.00	5.22
Flush, balance & test	ls	job	6,500	4,440
Supervise opers & instruc	ls	job	5,200	2,170
Plug valve, 6"	ea	2	575.00	713.22
8"	ea	5	760.00	807.59

Bids: 6-10-58 Items	Unit	Quantity	Unit Prices 1C	2
15"	lf	880	8.90	12.10
24"	lf	370	13.00	14.15
36"	lf	1,150	22.00	22.40
42"	lf	2,050	26.00	26.40
MH, storm drain, 8.1-10.0'	ea	1	720.00	345.00
10.1-12.0'	ea	6	825.00	421.00
12.0-14.0'	ea	2	875.00	505.00
14.1' & ov	ea	3	1,000	575.00
Water pipe, 16"	lf	3,880	13.50	14.50
10"	lf	1,190	8.00	9.30
8"	lf	3,380	5.50	6.25
6"	lf	500	4.60	4.95
2½"	lf	140	3.30	5.80
Gate valve & box, 16"	ea	2	440.00	635.00
10"	ea	2	220.00	245.00
8"	ea	4	160.00	165.00
6"	ea	19	120.00	120.00
2½"	ea	4	85.00	68.00
Fire hydrants	ea	18	270.00	430.00
San sewer pipe, 12"	lf	4,980	$5.90	$8.85
8"	lf	1,790	2.90	4.95
6"	lf	530	2.60	2.80
xing, 8x8x6x8	ea	3	15.00	15.00
MH, under 8'	ea	6	350.00	300.00
8.1-10'	ea	2	400.00	340.00
10.1-12'	ea	1	490.00	420.00
12.1-14'	ea	1	560.00	505.00
14.1' & over	ea	5	730.00	730.00
conn to existing MH	ls	job	60.00	50.00
Electrical substations	ea	2	9,000	17,050
switching stations	ea	1	5,000	4,880
Pole	ea	20	100.00	135.00
Assembly C7	ea	4	90.00	115.00
C7-1, S2	ea	5	110.00	95.00
C9-1	ea	2	25.00	42.00
C9-1, S2	ea	10	50.00	52.00
E1, E11, F1-3	ea	5	120.00	72.00
E2-3	ea	2	55.00	40.00
LQ-2	ea	10	110.00	135.00
M-70	ea	2	140.00	142.00
S15-3	ea	1	2,000	1,350
Duct, 4", 2-way	lf	80	6.00	3.20
Conductor, #4ACSR	lf	5,000	0.14	0.08
#2ACSR	lf	9,100	0.16	0.10
Assembly M20-1 pothead installation	ea	1	900.00	930.00
M52 pole nos	ea	20	55.00	4.20
S2 str lgt pole tp pins & insul	ea	4	22.00	11.50
L7 str lgt top	ea	12	15.00	9.00

Schedule C—General Utilities

1C Northwestern Engineering Co., Rapid City, N.D. $367,867
2 Robertson & Cave, Inc., Great Falls, Mont. 437,227
EE Corps of Engineers, Walla Walla, Wash. 375,910

Bids: 6-10-58 Items	Unit	Quantity	Unit Prices 1C	2
Stripping	ac	2.6	$225.00	$270.00
Excavation	cy	71,100	0.35	0.42
Embankment	cy	11,200	0.32	0.27
Base course	cy	3,750	2.30	4.50
Leveling course	cy	1,100	4.00	7.50
CMP, 18"	lf	116	6.50	6.50
Prime coat	t	17	52.00	48.00
Asphaltic cement	t	67	45.00	50.00
concrete pavement	t	1,120	12.00	18.00
Concrete curb	lf	3,750	2.50	2.25
Valley gutters	lf	180	4.00	2.80
Drain inlets	ea	9	550.00	400.00
Curb inlets, type C & C-1	ls	job	400.00	1,375
Storm drain pipe, 10"	lf	270	4.80	5.75
12"	lf	2,650	6.60	8.00

Clay vs Concrete Sewer Pipe

Higher priced vitrified clay pipe wins contract from concrete alternate, for Texas sewer improvements

Vitrified clay sewer pipe in sizes from 8 to 30 in. in diameter, ASTM C-13 standard strength and C-200 extra strength, will be used for these Temple, Tex. sewer improvements. They will be laid in 0-6 ft to 36-40 ft cuts.

The city's $443,142 award to Elm Fork Construction Co., Dallas, was 16% above Elm Fork's low bid on the reinforced concrete culvert pipe alternate, ASTM C76-I for standard strength and C76-II for extra strength. It was 34% below the high of the five bids on the vitrified clay pipe alternate.

Freese & Nichols, Fort Worth, Tex., is the consultant.

Excavation is unclassified, but some rock is expected.

The contractor supplies all material. Rail and truck transportation is accessible to the project, with the railroad three miles away.

Class A concrete is specified 3,000 psi.

Minimum wages on the job range from a high of $2.00 for skilled, through $1.50 for semi-skilled, to a low of $1.00 for common laborers.

The bidding included:

	*Alt. A	**Alt. B
1 Elm Fork Constr. Co., Dallas, Tex.	$443,142C	$381,631
2 Steed Constr. Co., Fort Worth, Tex.	463,949	398,084
3 Stimson Constr. Co., Dallas, Tex.	545,572	471,290
5 Wyman Constr. Co., Houston, Tex.	673,341	nb

* Using vitrified clay sewer pipe
** Using concrete sewer pipe

The unit prices shown are the low bids on the alternate types of pipe.

West Side Outfall Sewer

Station 184+11.45

Bids: 7-8-58 Items		Unit	Quantity	Unit Prices 1C VCSP	1 CSP
SP, 27", cut 0-6'	f&i	lf	230	$10.72a	$6.75c
6-8'	f&i	lf	140	11.72a	6.95c
8-10'	f&i	lf	270	12.35a	4.20c
10-12'	f&i	lf	200	12.50a	4.60c
12-14'	f&i	lf	230	13.50a	8.70d
14-16'	f&i	lf	220	14.50b	9.20d
16-18'	f&i	lf	250	15.50b	9.60d
18-20'	f&i	lf	120	16.50b	11.20d
20-24'	f&i	lf	220	18.00b	13.20d
incl conc encasement					
24-28'	cip	lf	170	24.00a	21.00c
28-32'	cip	lf	280	28.50a	25.50c
32-38'	cip	lf	130	34.00a	31.00c
36-40'	f&i	lf	280	37.50a	33.50c
21", cut 0-6'	f&i	lf	1,190	5.24a	4.40
6-8'	f&i	lf	790	5.60a	4.60
8-10'	f&i	lf	580	5.80a	4.95
10-12'	f&i	lf	90	6.10a	5.20
12-14'	f&i	lf	80	6.40a	5.40
14-16'	f&i	lf	80	6.80b	5.80
16-18'	f&i	lf	290	7.60b	6.80

(Unit Prices continued p. 92)

To Best Meet Fencing Needs

PAGE FENCE

offers the Widest Choice

You can choose from
—8 Fence Styles
—8 Fence Heights
—4 Fabric Metals
—2 Types Metal Posts
—Top Rail or Top Wire
—Single or Double Extension Arms
—6 Gate Styles, Many Widths

• PAGE provides a wider choice of long lasting fence fabric metals. Each has characteristics which meet individual preferences or make it more suitable to meet certain climatic or service conditions.

Galvanized Steel • Woven of time-proved open-hearth steel wire, hot-dipped galvanized after weaving to assure long service.

Aluminized Steel • By a PAGE patented process a coating of commercially pure aluminum is bonded to steel wire to provide longer corrosion resistance, yet its cost is comparable with fence fabric having shorter life expectancy.

Aluminum • Another metal in non-corrosive class. It will not rust, will not discolor materially under unfavorable conditions. Semi-flat weaving gives it exceptional strength.

Stainless Steel • This chrome-nickel fabric is immune to practically all corrosive elements. Advantageous near salt water and where air is laden with smoke, sulphur and other factory emissions.

Nation-wide Erecting Service • In more than 100 districts there are local, responsible members of Page Fence Association—the largest fence engineering, erecting and servicing organization. These experts own their own plants and equipment, carry complete stocks of PAGE FENCE materials, and operate crews of trained workmen. Each firm is permanently located and has lasting interest in every job it handles.

Write for file-size folder containing full information and name of member nearest you. Address—

PAGE FENCE ASSOCIATION
Dept. E • MONESSEN, PA.

A PRODUCT OF PAGE STEEL & WIRE DIVISION AMERICAN CHAIN & CABLE COMPANY, INC.

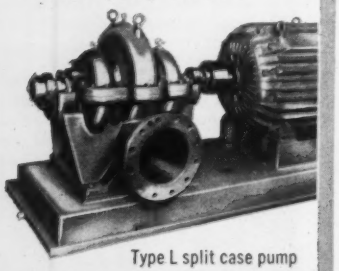
Now, there's a new word for dependable pump performance...

WEINMAN

Weinman split-case centrifugal pumps are making a name for themselves as economical performers, we're told. The word is out that Weinman pumps can't be matched for long, trouble-free life, with only nominal maintenance and little or no downtime. For general water pumping service, these sturdy, smooth-running units handle more volume at unusually low costs.

More and more engineers are investigating the unique advantages of Weinman split-case pumps. They are modest in original cost and very economical to operate and maintain. The upper half of the case opens in a jiffy for inspection — no need to disturb piping, connections, fittings or the driver.

Your Weinman pump specialist can tell you the interesting facts about these efficient centrifugal pumps. Look him up in the Yellow Pages of your telephone directory. Or, write us for split-case centrifugal pump bulletins.



Type L split case pump

THE WEINMAN PUMP MFG. CO.

290 Spruce St. Columbus, Ohio

CENTRIFUGAL SPECIALISTS

. . . clay vs. concrete sewer pipe

Bids: 7-8-58 Items	Unit	Quantity	Unit Prices 1C VCSP	1 CSP
18", cut 0-6' f&i	lf	5,720	4.70a	3.60
6-8' f&i	lf	1,760	5.00a	3.80
8-10' f&i	lf	740	5.20a	4.20
10-12' f&i	lf	370	5.60a	4.60
12-14' f&i	lf	320	5.80a	4.90
14-16' f&i	lf	330	6.20b	5.40
16-18' f&i	lf	100	7.20b	6.40
15", cut 0-6' f&i	lf	1,310	3.95a	3.30
6-8' f&i	lf	580	4.20a	3.50
Xings, compl w/all matl, creek, 2+00 area	ls	job	6,850	6,850
73+00 area	ls	job	2,400	2,400
76+00 area	ls	job	1,400	1,400
87+50 area	ls	job	1,375	1,375
97+00 area	ls	job	1,675	1,675
108+00 area	ls	job	1,075	1,075
116+27 area	ls	job	925.00	925.00
160+70 area	ls	job	1,050	1,050
163+00 area	ls	job	500.00	500.00
181+80 area	ls	job	5,100	5,100
US hwy, sta 142+76.17 area	ls	job	15,500	15,500
MH, std, 6' or less	ea	44	$130.00	$130.00
extra depth over 6'	lf	90	30.00	30.00
drop	ea	1	75.00	75.00
Grav, embedment & bkfl ip	cy	1,500	4.00	4.00
Conc S cradle & encasement	cy	350	18.00	18.00
Station 184+11 to 214+69				
SP, 15", cut 0-6' f&i	lf	470	3.95a	3.30
6-8' f&i	lf	750	4.20a	3.50
8-10' f&i	lf	450	4.40a	3.80
10-12' f&i	lf	460	4.80a	4.20
12-14' f&i	lf	400	5.30a	4.60
14-16' f&i	lf	280	5.95b	5.60
16-18' f&i	lf	60	6.95b	6.60
12", cut 0-6' f&i	lf	1,340	2.70a	2.70
6-8' f&i	lf	230	3.10a	2.90
8-10' f&i	lf	30	3.50a	3.20
Xings, compl with all matl, G.C. & S.F. Ry	ls	job	3,750	3,750
stream, 184+80 area	ls	job	750.00	750.00
MH, std, 6' or less	ea	7	130.00	130.00
extra depth over 6'	lf	20	30.00	30.00
Grav, embedment & bkfl ip	cy	200	4.00	4.00
Pavement, replace asph w/ conc slab, complete	sy	50	7.00	7.00
Station 214+69 to 261+58				
SP, 15" cut, 0-6' f&i	lf	1,450	3.95a	3.30
6-8' f&i	lf	1,160	4.20a	3.50
8-10' f&i	lf	100	4.40a	3.80
12", cut 0-6' f&i	lf	1,340	2.70a	2.70
6-8' f&i	lf	230	3.10a	2.90
8-10' f&i	lf	30	3.50a	3.20
Xings, compl with all matl, F.M. Road 2 305	ls	job	2,900	2,900
U.S. Hwy 36	ls	job	2,900	2,900
81	ls	job	1,600	1,650
MH, std, 6' or less	ea	8	130.00	130.00
extra depth over 6'	lf	5	30.00	30.00
Grav, embedment & bkfl ip	cy	300	4.00	4.00
Conc S cradle & encasement	cy	10	18.00	18.00

South Side Interceptor

SP, 15", cut 0-6' f&i	lf	90	$3.95a	$3.30
6-8' f&i	lf	160	4.20a	3.50
8-10' f&i	lf	260	4.40a	3.80
10-12' f&i	lf	170	4.80a	4.20
12-14' f&i	lf	340	5.20a	4.60
14-16' f&i	lf	250	5.95b	5.60
12", cut 0-6' f&i	lf	3,850	2.70a	2.70
6-8' f&i	lf	1,520	3.10a	2.90
8-10' f&i	lf	620	3.50a	3.20
10-12' f&i	lf	270	3.90a	3.60
12-14' f&i	lf	70	4.50a	3.95
10", cut 0-6' f&i	lf	1,880	2.60a	2.65
8", cut 0-6' f&i	lf	200	2.60a	2.60
6-8' f&i	lf	390	2.90a	2.90
12-14' f&i	lf	50	3.10a	3.70
Stream xing, compl w/all matl 130+00 area	ls	job	800.00	800.00
MH, std, 6' or less	ea	34	130.00	130.00
extra depth over 6'	lf	40	30.00	30.00
drops	ea	1	50.00	50.00
Grav, embedment & bkfl ip	cy	400	4.00	4.00
Conc S cradle & encasement	cy	15	18.00	18.00
Pavement, replace asph w/ conc slab, complete	sy	140	7.00	7.00
Lift sta w/pumps & piping	ls	job	19,000	19,000
Force main, 10" CIP, w/ ftgs f&i	lf	3,600	4.50	4.50

So. & No. Meadow Oak Outfall

SP, 10", cut 0-6' f&i	lf	1,600	2.85a	2.65
6-8' f&i	lf	460	3.10a	2.90
8-10' f&i	lf	250	3.40a	3.20
10-12' f&i	lf	180	3.90a	3.60
12-14' f&i	lf	200	4.40a	3.95
14-16' f&i	lf	180	5.60b	4.60
16-18' f&i	lf	470	6.60b	5.60
8", cut 0-6' f&i	lf	1,200	2.60a	2.50
6-8' f&i	lf	750	2.90a	2.70
8-10' f&i	lf	430	3.20a	2.95
10-12' f&i	lf	40	4.00a	3.40
12-14' f&i	lf	20	4.50a	3.70
14-16' f&i	lf	20	5.50b	4.20
MH, std, 6' or less	ea	17	130.00	130.00
extra depth over 6'	lf	65	30.00	30.00
drops	ea	2	50.00	50.00
Grav, embedment & bkfl ip	cy	350	4.00	4.00
Conc S cradle & encasement	cy	45	18.00	18.00
Pavement, replace asph w/ conc slab, complete	sy	40	7.00	7.00

Avenue P Interceptor

SP, 10", cut 0-6' f&i	lf	840	$2.85a	$2.65
6-8' f&i	lf	1,200	3.10a	2.90
8-10' f&i	lf	110	3.40a	3.20
8", cut 0-6' f&i	lf	300	2.60a	2.50
6-8' f&i	lf	330	2.90a	2.70
Pavement replacement, compl	sy	500	7.00	7.00
MH, std, 6' or less	ea	10	130.00	130.00
extra depth over 6'	lf	5	30.00	30.00
Grav, embedment & bkfl ip	cy	250	4.00	4.00
Stream xing, compl ip, incl 144 lf 10" CIP, piers, etc	ls	job	1,750	1,750
Conc, encasement & cradle	cy	10	18.00	18.00

Diversion Sewers at Lift Stations

SP, 8", cut 0-6' f&i	lf	440	2.60a	2.50
6-8' f&i	lf	240	2.90a	2.70
8-10' f&i	lf	120	3.20a	2.95
10-12' f&i	lf	150	4.00a	3.40
MH, std, 6' or less	ea	3	130.00	130.00
extra depth over 6'	lf	5	30.00	30.00
Creek xing at Oak Farms diversion sewer, compl	ls	job	700.00	700.00
Remove lift stations at 57 St, Ave G., Oak Farms, So. 15 st	ea	4	150.00	150.00
West of McClosky Hosp	ea	2	300.00	300.00
Country Club	ea	1	350.00	350.00

Sewage Plant Effluent

SP, 30", cut 0-6' f&i	lf	740	14.95a	9.80c
6-8' f&i	lf	740	15.50a	10.20c
8-10' f&i	lf	750	16.20a	10.80c
10-12' f&i	lf	450	17.20a	11.20c
12-14' f&i	lf	190	18.50b	12.20d
14-16' f&i	lf	1,140	19.50b	13.20d
16-18' f&i	lf	480	21.50b	14.20d
MH, std, 6' or less	ea	9	130.00	130.00
extra depth over 6'	lf	51	30.00	30.00
Grav, embedment & bkfl ip	cy	780	4.00	4.00
Outlet structure, complete	ls	job	1,750	11,750

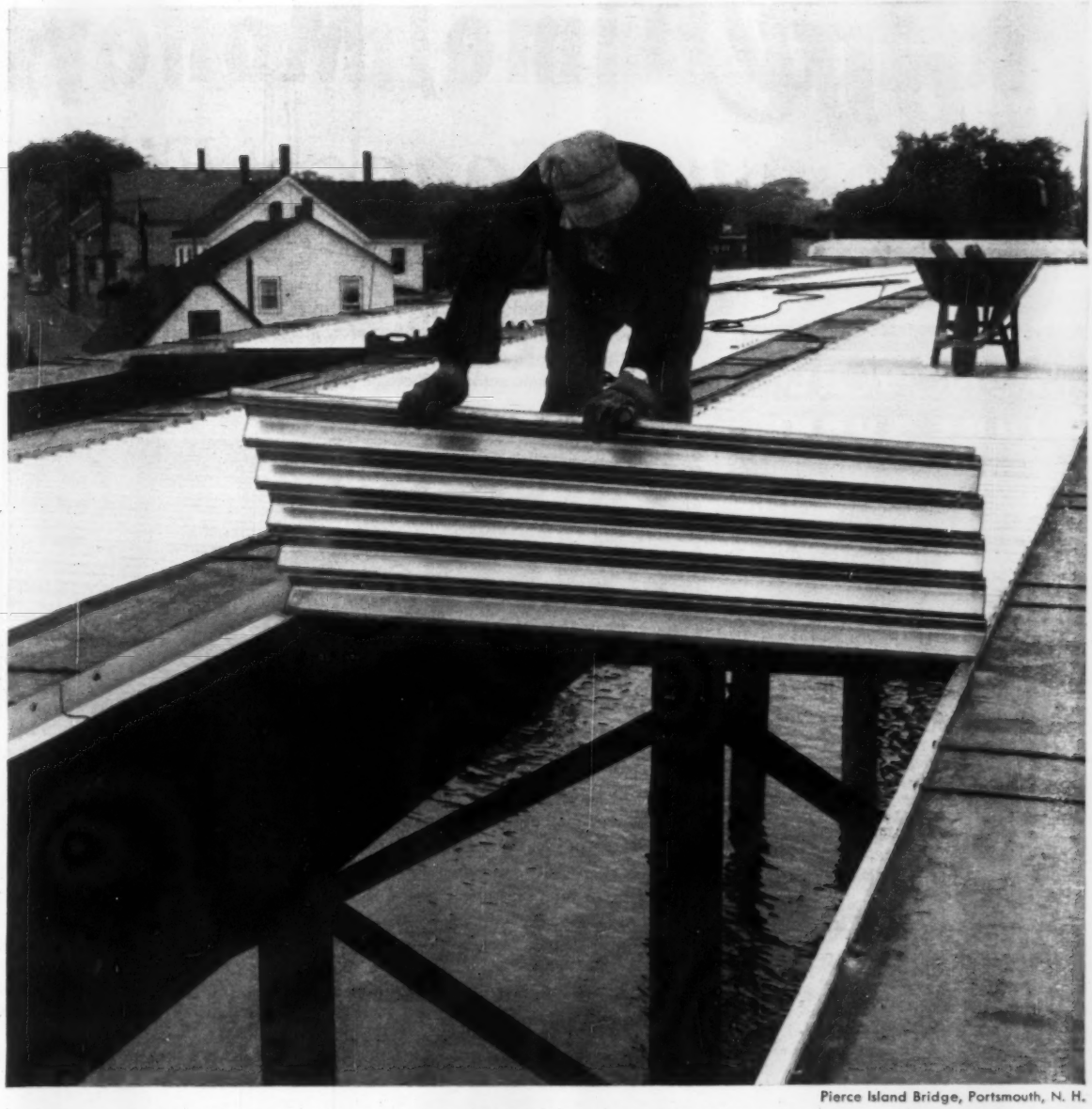
a C-13 b C-200 c D76-I d C76-II cip complete in place
Completion Schedule: 360 cal days.
Liquidated damages: $50/day.

Cost per Mile For Wisconsin Highways

On work completed in 1957 or carried over to 1958

	'58 Work carried over to '57 Miles	'58 Work carried over to '57 Cost/Mi	'57 Work carried over to 1958 Miles	'57 Work carried over to 1958 Cost/Mi	Work completed in 1957 Miles	Work completed in 1957 Cost/Mi
Concrete surf	25.93	$155,676	60.83	$67,832	89.1	$109,113
base course					4.91	184,856
Sheet asphalt	0.53	106,660			0.53	106,660
Bit concrete	33.75	20,576	78.29	32,529	141.15	21,162
surf, pit mix, single agg	40.06	11,657	33.72	13,211	238.14	10,571
road mix	154.06	3,338	76.08	4,746	261.58	3,148
Grade & drain	139.15	46,703	92.31	22,695	542.70	34,882
Subbase	115.75	7,341	125.13	11,445	302.98	6,149
Gravel or cr stone base	196.09	13,186	167.08	12,631	671.93	10,342

(Unit Prices continued p. 96)



Pierce Island Bridge, Portsmouth, N. H.

NEW GRANCO *S-I-P* BRIDGE FORMS STAY IN PLACE

Look easy? It *is* easy. And practical, too. Permanent, galvanized S-I-P (*Stay-In-Place*) steel forms for concrete bridge floors. No wood forms to remove. No shoring. No special tools. No safety nets or scaffolds required. All the work is done from above. S-I-P Bridge Forms fit between stringers. The minute they are set in place, you have a solid working deck, ready for reinforcing steel and concrete. Think of the construction time you save. Granco S-I-P Bridge Forms are available now. Want more information? Just mail coupon.

VISIT GRANCO BOOTH No. 6, CIVIL ENGINEERING SHOW, NEW YORK CITY

GRANCO STEEL PRODUCTS CO.
6506 N. Broadway, St. Louis 13, Mo.
A Subsidiary of GRANITE CITY STEEL CO.
Distributors in Principal Cities

GRANCO

MAIL COUPON FOR BOOKLET

Contains product description, application data, job photos, installation illustrations.

Name_____

Firm_____

Address_____

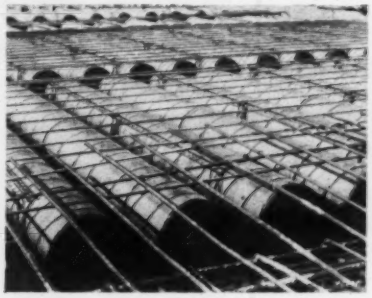
City_____ State_____

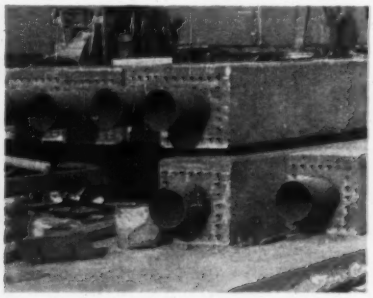
Mail to Granco address shown at left.
Attention Dept. E-812.

Save Time, Money, ...use Sonoco Fibre

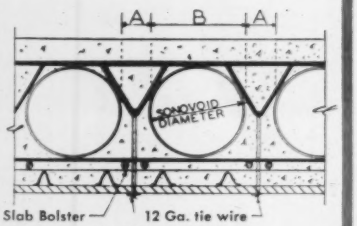
Quality-Engineered Products for Economical Construction

Sonoco's Fibre Construction Products are precision-manufactured under a rigid quality control system to meet the exacting requirements of the industry. Years of research in the laboratories of Sonoco led to the development of these low-cost products . . . specifically designed to assist contractors, reduce the cost of construction, reduce construction

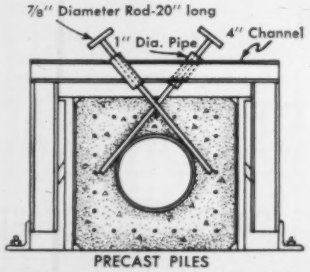




Simple methods of Placing and Hold down to prevent flotation.



SLABS and DECKS



PRECAST PILES

In concrete construction, form voids in concrete members with SONOVOID Fibre Tubes

. . . best way to economize in man-days on the job

. . . best way to save on over-all cost.

The use of the voided concrete system reduces weight of concrete floor and roof slabs of buildings and cast-in-place or precast bridge decks.

You'll save concrete and reinforcing steel too because these low-cost SONOVOID Fibre Tubes displace low-working concrete at the neutral axis without impairing structural strength.

And because less concrete is required per square foot, greater areas can be formed and poured at one time . . . faster construction means savings in labor and money!

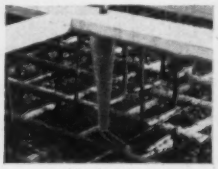
For precast, prestressed concrete piles the use of SONOVOID Fibre Tubes reduces the amount of concrete and steel required and reduces the weight of the piles so that they are more easily handled and driven.

Order SONOVOID Fibre Tubes in sizes from 2.25" to 36.9" O.D. Unless otherwise specified shipment will be made in 18 ft. lengths. End closures available. Write for slab design tables and complete technical information.

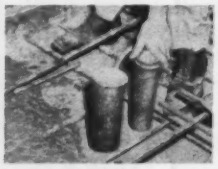
See us at the A.S.C.E. Show, Booth 34-35
Statler-Hilton Hotel, New York City, October 13-17

MORE SONOCO FIBRE CONSTRUCTION PRODUCTS

DUROPIPE
Bituminized Fibre Pipe

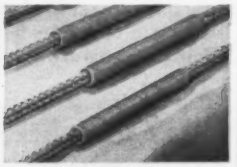


Anchor Bolt Protectors



Sonopipe Sleeves

Sonomold Concrete Test Cylinder Molds



Dowel Rod Sleeves

Materials and Labor!

Construction Products

time and save expensive materials. For engineers and architects, the versatility of these products permit new design and structural features. For owners, obviously, their use results in a saving in overall cost. Follow the lead of other successful contractors from coast to coast . . . use architect and engineer approved Sonoco Fibre Construction Products and save time, money, materials and labor!

Whenever there's a round column of concrete to be formed, there's a low-cost Sonotube Fibre Form to do the job faster and more economically than by any other method.

Whether the columns are for a building, parking garage, school, hospital, church, bridge or overpass . . . makes no difference because Sonotube Fibre Forms are available in sizes from 2" to 48" I.D.

Choose from 3 types:

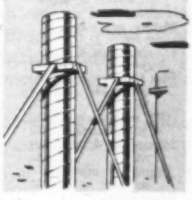
Seamless (Pat. pend.) a premium form for finished columns
"A" Coated—standard form for exposed columns
"W" Coated—for unexposed columns.

Unless other lengths are specified shipment will be made in standard 18 ft. lengths.

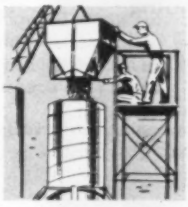
Lightweight and easy to handle

Can be sawed to size on the job

Place tubes by conventional methods



Only minimum bracing is required



Pour by normal method at normal rate

Stripping is easy and quick

Sonoco Fibre Construction Products are immediately available from distributors in all principal cities.

See our catalog in Sweet's

For complete technical information and prices write

SONOAIRDUCT Fibre Duct for Perimeter Heating

3454

- HARTSVILLE, S. C.
- LA PUENTE, CALIF.
- MONTCLAIR, N. J.
- AKRON, INDIANA
- LONGVIEW, TEXAS
- ATLANTA, GA.
- BRANTFORD, ONT.
- MEXICO, D.F.

SONOCO

Construction Products

SONOCO PRODUCTS COMPANY

Puerto Rico Adds Pumps To San Juan Sewage System

This $656,586 contract for the Martin Peña sewage pumping station in San Juan, Puerto Rico, went to Municipal Service Co., Kansas City, Mo. The job for the Puerto Rico Aqueduct & Sewer Authority, San Juan Metropolitan Sewer District, is part of the extensive system that is being constructed by stages. Buck, Seifert & Jost, New York City, is the consultant.

The plant will be housed in a 100x36 ft concrete building. Pumps, located in dry pit, include one 10 mgd, one 20 mgd and one 30 mgd vertical, bottom suction, mixed flow, extended shaft centrifugal pumps with vertical squirrel cage induction type motors, maximum head approximately 25 ft, and account for 10% of the contract price.

Class A concrete specifications require 6 to 7 bags of cement, maximum water-cement ratio 0.53, compressive strength 3,000 psi in 28 days. Class B requires 4 to 5 bags of cement, maximum water-cement ratio 0.71, compressive strength 2,000 psi in 28 days.

Wages prevailing in San Juan include: carpenters, $1.16; structural ironworkers, $1.88, common laborers, $0.68.

1 Commonwealth Pile Co., Inc., Isla Verde, Carolina, P. R. $829,353
3C Municipal Service Co., Kansas City, Mo 656,586
12 The Blythe Co. of P. R., Inc., San Juan, P. R. 985,378

Bids: 4-7-58 Items	Unit	Quantity	Unit Prices 1	3C
Exc & embankment at site	cm	6,300	$6.28	$18.00
at borrow pit, for surf dressing & loam	cm	150	4.95	4.00
Sheeting left in place	Mfbm	5	231.00	100.00
Grav or cr stn fndn f&p	cm	60	4.95	6.00
Select fill f&p	cm	10	3.60	4.00
Conc masonry, cl A	cm	2,500	46.81	50.00
cl B	cm	300	27.98	30.00
Portland cement f	bbl	5,400	4.85	6.00
Steel reinforcement for conc masnry f&p	lb	400,000	0.12	0.11
Pump equipment & appurt f&i	ls	job	85,083	65,116
Mech cleaned screen equipment & appurtenances f&i	ls	job	19,462	13,000
Meters, gages & appurt f&i	ls	job	4,465	3,260
Cranes, hoists & appurt f&i	ls	job	12,925	12,400
Pipe & appurt, inside f&i outside, 66" influent SP f&i	lm	5	214.80	130.00
72" effu dischge f&i	lm	6	294.00	140.00
4" water supply f&i	lm	50	30.84	20.00
Superstruct & misc met wk f&i	ls	job	17,650	13,820
equip & appurtenances f&i	ls	job	20,778	21,263
Rdwy & paved areas construct	sm	250	13.05	5.00
Paths & walks construct	sm	60	9.42	6.00
Fencing f&i	lm	160	22.58	16.00
Electrical equipment f&i	ls	job	81,566	93,266

Completion schedule: 400 consecutive days
cm cubic meter lm lineal meter sm square meter

EDITOR'S NOTE: The Massachusetts Municipal Airport unit price report on p. 82 of the August 14 issue gave North Andover instead of the City of Lawrence as the owner. The airport is located in the adjacent town of North Andover.

No place for amateurs!

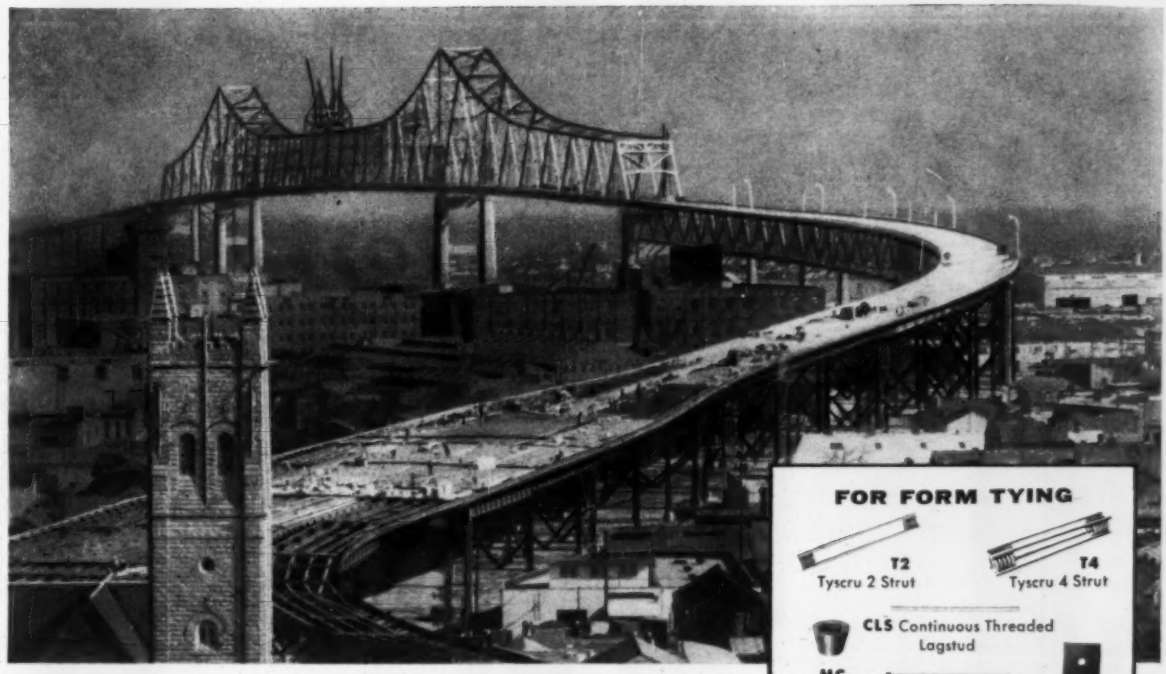
Pushing a "highway" to the sea, such as the St. Lawrence Seaway Project, calls for veteran construction men with modern skills and know-how.

THE FIDELITY AND CASUALTY COMPANY OF NEW YORK continues, year after year, to keep pace with progress—providing all kinds of bonds and insurance—for all types of construction projects—in all parts of the world.

The Fidelity and Casualty Company of New York

"Writing Bonds Since 1876"

A Member Company of America Fore Loyalty Group



Greater New Orleans Bridge at stage in which Richmond products were used.

Another Big One for Richmond!

Dependable Richmond Form Tying Devices used in form work for the new Greater New Orleans Bridge.

The Greater New Orleans Bridge, spanning the Mississippi River and connecting New Orleans proper with Algiers (a smaller section of the city), is the longest cantilever structure in the United States and the third largest in the world. It is significant that the two major contractors for this important project selected Richmond products for their concrete form tying and hanging. Dravo Corporation of Pittsburgh, Pa. used Richmond Tyscrus and accessories in tying the forms for the giant piers supporting the cantilever superstructure. Boh Brothers Construction Company of New Orleans, used the new Richmond Free-Fit Hanger Frames in hanging the approach deck forms.

The continued and increasing use of Richmond products on so many of the large, important projects in progress today, is a strong testimonial for their time and labor saving qualities.

FOR FORM TYING

T2 Tyscru 2 Strut

T4 Tyscru 4 Strut

CLS Continuous Threaded Lagstud

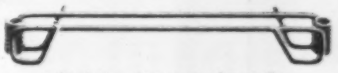
MC Malleable Tycones

LAG Tylag

FW Flat Washer

The Richmond Tyscru is an extra strong, resistance welded tie designed to take abuse encountered in medium and heavy concrete construction. An extremely simple tie, capable of many combinations and uses in the field, it may be used with or without Tycones depending on the desirability of the spreader action, or combined with Continuous Threaded Lagstuds to form an Adjustable Tyscru.

FOR FORM HANGING



HFT-F Free-Fit Hanger Frame Ty
Available in Standard or Offset type

LN Lag Nut

LAG Tylag

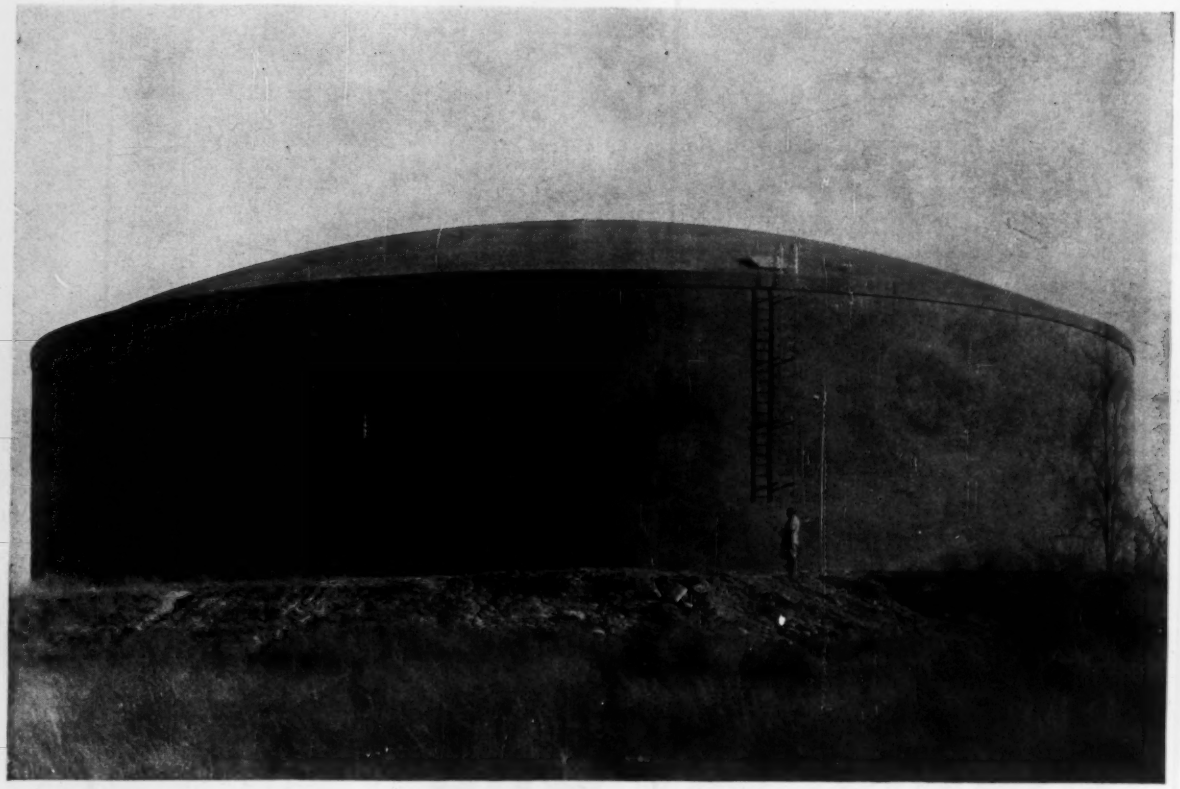
FW Flat Washer

The Richmond Free-Fit Hanger Frame Ty is made with over-sized free-fit coils to permit a ½" Tylag to pass thru, to be secured from above by means of a Lag Nut. All installations and adjustments can be made from above the deck assuring easier, faster erection. Forms can be brought up tight against the beam flange, thereby minimizing grout leakage.

Richmond has more than 400 time-tested products, backed by 47 years of experience, for any concreting need. Send for a free copy of the current Richmond Handbook describing the full line of Richmond Form Tying Devices, Anchorages and Accessories...and, if you have a specific concreting problem, let Richmond's Technical Department help you. They will show you how to do a better job safely and economically with Richmond products for the concrete construction industry. Write to—

INSIST ON RICHMOND
....AND BE SURE
IT'S RICHMOND

Richmond
SCREW ANCHOR CO., INC.
816-838 LIBERTY AVE., BROOKLYN 8, N. Y.
315 SOUTH FOURTH ST., ST. JOSEPH, MO.



This prestressed concrete water tank was constructed in Kettering, Ohio, by Preload Concrete Structures, Inc., Westbury, L. I., N. Y. The Parlon-based finish, "Moisture and Chemical Resisting Enamel," is made by the Lowe Brothers Co., Dayton, Ohio.

200 GALLONS OF PARLON-BASED PAINT PROTECT THIS 3,000,000-GALLON TANK

There are many reasons for the ever-increasing preference of paints based on Hercules Parlon® chlorinated rubber. Wherever protective coatings must meet a challenge from the weather or the corrosive effects of chemicals, Parlon-based paints are providing longer service at lower long-term cost.

For this water tank in Kettering, Ohio, the coating selected had to meet two main tests—it had to be attractive and it had to require little maintenance. Parlon passed on both counts. Only 200 gallons in a single coat were needed to provide the tank with an attractive green coating. Fifteen months later the paint job retains its "just like new" look.

Perhaps the many unusual properties available in Parlon-based coatings can solve your own maintenance problems. Your local paint supplier can provide additional information, or write direct to Hercules.

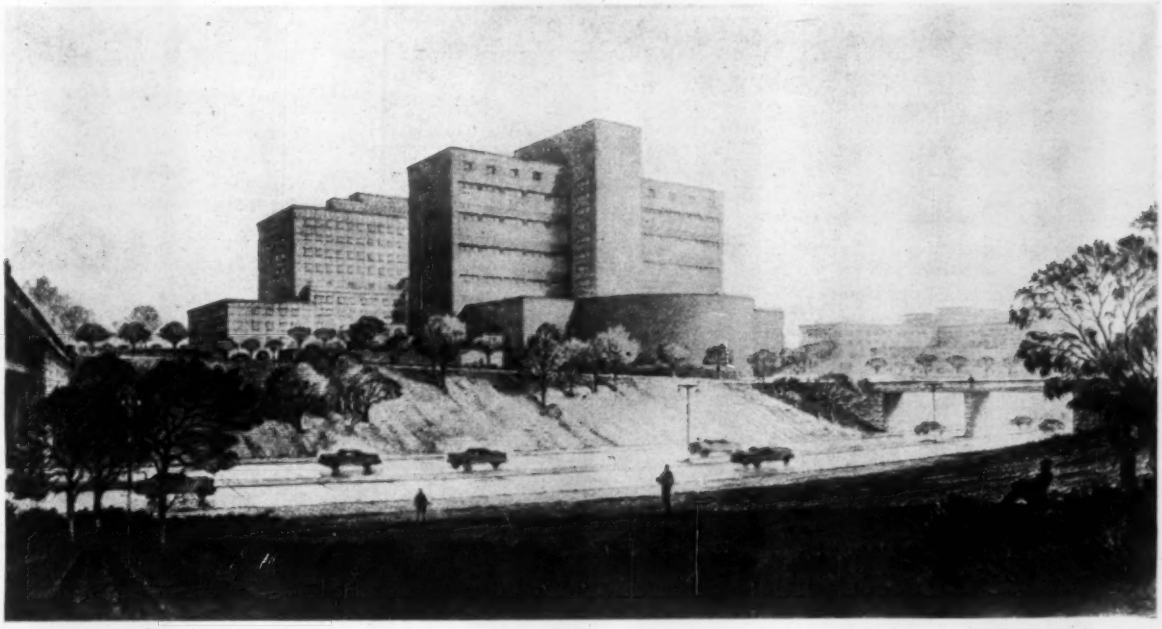
Cellulose Products Department

HERCULES POWDER COMPANY

INCORPORATED

900 Market Street, Wilmington 99, Delaware

CR58-9



CRIMINAL COURT BUILDING for New York City in Queens Borough will house courts, grand jury, probation, judges chambers, district attorney and attendant offices, and a jail. Completion is scheduled for fall of 1960.

Steel Frame Building to Cost $19 Million

Air conditioning and flexible elevator system are features of this eight-story New York courthouse

The $10,942,000 general construction award on this criminal court building and jail in the Borough of Queens, New York City, to H. R. H. Construction Corp., New York City, accounts for 57.3% of the total cost to the Dept. of Public Works, City of New York, Frederick H. Zurmuhlen, Commissioner. This is $15.61 per sq ft out of the $27.23 per sq ft total and $1.86 out of $3.25 per cu ft.

Phase A, Completed July, 1957

Lazere Constr. Corp., N.Y.C. Foundation & steel framework	
S. & M. Plumbing Co., Inc., N.Y.C. Preliminary plumbing	
Astrove Plumbing & Heating Co., N.Y.C. Preliminary heating & ventilating	
E-J Electric Installation Co., N.Y.C. Preliminary electrical work	
Total awards, Phase A	$2,445,430

Phase B, for Sept., 1960 Completion

H.R.H. Constr. Corp., N.Y.C. General construction	$10,942,000	
A. Rosen & Son, N.Y.C. Plumbing	1,064,117	
H. Sand & Co., Inc., N.Y.C. Heating, ventilating and air conditioning	1,828,200	
Meyerbank Electric Co., Inc., N.Y.C. Electrical work	2,800,000	
Total awards, Phase B		$16,634,317
Total awards		$19,079,747

Almost one fifth of the general construction contract goes for miscellaneous metal and jail equipment.

The eight-story steel frame building will have brick outside walls. Floor area is 700,768 sq ft, enclosed space is 5,872,063 cu ft.

The building will be fully air-conditioned, with a high velocity dual duct system.

Specifications for the main electrical switchboard require draw-out type circuit breakers and two electric services, with a tie circuit breaker, to insure easy maintenance and maximum continuity of service.

The main banks of passenger elevators are designed for operation with and without attendants, with six patterns of traffic programs designed to match the prevailing traffic.

The following analysis shows where these building dollars go and the percentage of the cost which they represent.

Work on Phase B commenced April 1, and 30 calendar months are allowed for its completion. Liquidated damages are $300 per calendar day.

Contract:	% of Genl.	% of Total	Cost per sf	Cost per cf
Foundation, steel framework and preliminary mechanical work		12.8	$3.49	$0.42
General Contract:				
Cement finish work, fireproofing & slabs	12.5	7.1		
Exterior masonry	24.0	13.7		
Metal interior partitions (masonry included in exterior)	0.5	0.3		
Carpentry & millwork	8.4	4.8		
Sash & glazing	5.7	3.3		
Doors	a	a		
Roofing	1.1	0.6		
Insulation	0.5	0.3		
Waterproofing & dampproofing	0.5	0.3		
Metal lath, furring & plastering	3.3	1.9		
Hollow metal work	2.2	1.3		
Misc iron & ornamental metal, and prison equipment	19.5	11.2		
Tile, terrazzo & marble	4.5	2.6		
Floor covering	0.5	0.3		
Painting	1.4	0.8		
Finish hardware	0.8	0.5		
Acoustical ceilings	1.0	0.6		
Elevators	9.8	5.6		
Metal shelving & lockers	2.5	1.4		
Built-in refrigerators, kitchen equipment & special items	0.7	0.4		
Mail chutes	0.1	—		
Site work	0.5	0.3		
Total general contract	100.0	57.3	15.61	1.86
Mechanical Contract:				
Plumbing		5.6	1.52	0.18
Heating, ventilating and air conditioning		9.6	2.61	0.31
Electrical work		14.7	4.00	0.48
Total contracts, $19,089,747		100.0	$27.23	$3.25

a Included in hollow metal or millwork

(*Building Dollar continued p. 100*)

GOT THIS?
(Predraining Problem)

GET THIS!
(Skilled Wellpoint Engineering)

From

GRIFFIN

WELLPOINT CORP.

881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.
West Palm Beach, Fla

PHOENIX BRIDGE COMPANY

Engineers—Fabricators
Erectors
Structural Steel
BRIDGES and BUILDINGS

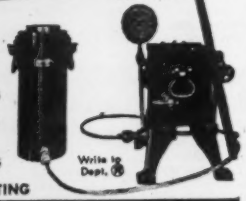
General Office and Shops
PHOENIXVILLE, PA.

Subsidiary—Barium Steel Corporation

DUDGEON HYDRAULIC JACKS

SALES RENTALS
• CAPACITY TO 600 TONS

FOR:
PILE TESTING
•
UNDER-PINNING
•
BRIDGES
•
PIPE PUSHING
•
SOIL TESTING



RICHARD DUDGEON INC.
786 BERGEN ST. • ST 9-4040 • BROOKLYN, N. Y.

Third Quarterly Round up: ▶ **Where the Building Dollar Goes**

Unit Ratio Costs Supplied through the Courtesy of Hoeppler-Bartlett Co., Eau Claire, Wis.; Walsh Brothers, Inc., Cambridge, Mass., and Morley Construction Co., Los Angeles

TYPE OF: Building (purpose or product) Construction: frame outside walls	Dormitory Concrete Bricks & blocks		Dormitory Concrete Brick		Office Bldg. Reinf. Conc. & Msry Brick	
Date construction started	May 1, 1957		Apr., 1957		July, 1957	
Location, city	Eau Claire, Wis.		Boston, Mass.		Los Angeles, Cal.	
SIZE OF BUILDING: Height, stories	4a		3		2 plus parking roof	
Floor area, sf ft	37,000 sf		38,704 sf		17,000 sf	
Volume, cu ft	315,492 cf b		492,348 cf		153,000 cf	
% air conditioned	0%		0%		100%	
RANGE OF COST of this type building:	Actual		Actual			
Cost, $ per sq ft	$14.58		$20.89		.....	
$ per cu ft	1.71		1.64		.....	
$ per unit of capacity	$2,267/student Total cost $539,582		$3,925/student		.....	
ENR BUILDING COST INDEX (1913=100)	503		501		507	
PRINCIPAL ITEMS OF COST		Percent of Total Cost				
		%		%		%
Excavation and Site Improvements	$14,909	2.76	4.70		1.60	
Foundations	11,644	2.16	8.50			
Structural Frame	69,421	12.87	21.00		27.45	
Cement Finish Work	5,528	1.02	in exc & struct			
Exterior masonry	47,493	8.80	6.90		8.31	
Interior Partitions	37,063	6.87	7.80		0.39	
Carpentry and Millwork	44,940	8.33	10.50		6.77	
Sash and Glazing	30,654	5.68	0.40		2.18	
Doors	2,795	0.52	3.40c		0.08	
Roofing	8,151	1.51	1.60		1.30	
Insulation	1,595	0.30	In roofing		0.52	
Waterproofing and Dampproofing	500	0.10	0.76		0.06	
Metal Lath, Furring and Plastering	2,044	0.38	0.04		3.36	
Hollow Metal Work	8,110	1.50	in doors		0.08	
Miscellaneous Iron and Ornamental Metal	14,536	2.69	3.60		0.06	
Tile, Terrazzo, and Marble	14,520	2.69	2.60		2.52d	
Floor covering	5,390	1.00	1.60		.....	
Painting	11,262	2.09	2.80		1.73	
Finish Hardware	7,900	1.47	1.70		0.71	
Acoustical Ceilings	802	0.15	0.30		2.99	
Plumbing	46,777	8.67	5.60		5.68	
Heating, Ventilating, and Air Conditioning	89,130	16.52	6.30		14.99	
Electrical Work and Light Fixtures	45,775	8.48	7.50		11.12	
Elevators	.....	.....	.....		4.09	
Production Equip: (mach tools, process equip, etc.)	5,582	1.03	.....		.....	
Other Features:						
Supervision & Indirect	.....	.....	.....		3.01	
Venetian Blinds & Landscaping	.....	.....	.....		1.00	
Rubbish Chute	.....	.....	0.20		.....	
Metal Trim, Fire Extinguishers, Toilet Partitions & Accessories, W.C. Bolts & Misc. Unspecified Items	.....	.....	1.90		.....	
Weather Stripping	.....	.....	0.30		.....	
Superintendence & Surety Bond	13,060	2.41	.....		.....	

a 36 ft above grade b Cu ft volume, bottom of ground floor to roof c Includes windows d Includes Roxlite e Does not include boiler plant. Steam is supplied from existing plant.

Range for Dormitory Costs

Dormitory building prices in this table range from a minimum of $14.58 per sq ft for the 4-story structure, to a high of $20.89 per sq ft for the 3-story building. Cu ft cost trends were reversed for the two buildings, the 3-story averaging $1.64 and the 4-story $1.71 per cu ft.

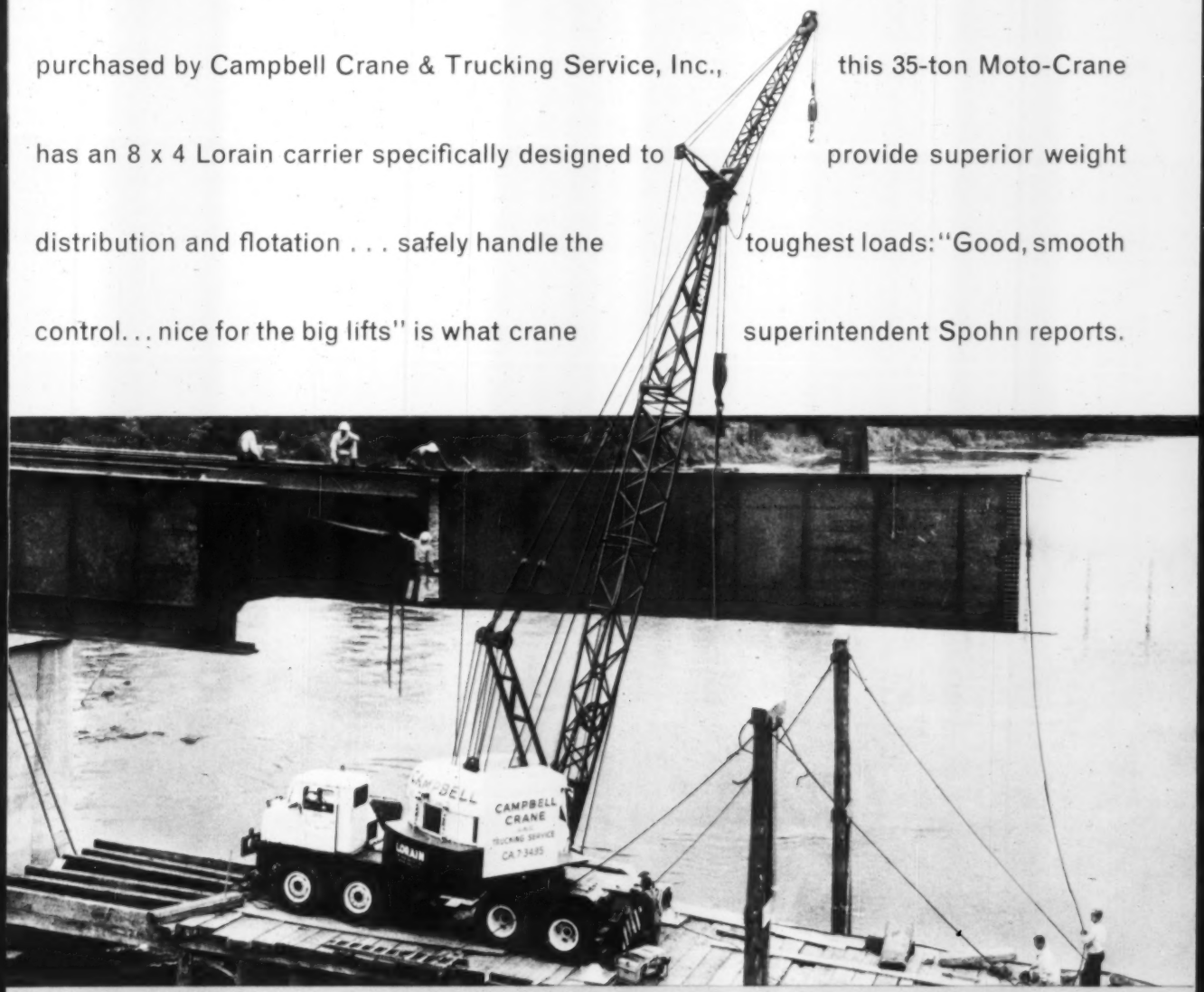
Per student cost of the 3-story building is $3,925, and for the 4 story, $2,267.

Soil conditions at the site of the Los Angeles office building necessitate that footings be 10 ft below ground floor.

These building cost structure reports for three buildings, constitute the ninth on "Where the Building Dollar Goes". They illuminate the complexities of building cost estimating and the variation in costs on individual buildings. Earlier reports in this series were published in ENR Oct. 8, 1953, pp. 148-149; Sept. 29, 1955, p. 212; July 5, 1956, p. 137; Aug. 2, 1956, p. 62; Dec. 6, 1956, p. 208; Oct. 17, 1957, pp.278-281; Mar. 20, 1958, p. 96.

LORAIN MOTO-CRANE LIFTS, CARRIES AND POSITIONS 19-TON GIRDERS

as it helps build a 550 foot bridge over the Willamette River in Oregon. One of 12 Lorains purchased by Campbell Crane & Trucking Service, Inc., this 35-ton Moto-Crane has an 8 x 4 Lorain carrier specifically designed to provide superior weight distribution and flotation . . . safely handle the toughest loads: "Good, smooth control. . . nice for the big lifts" is what crane superintendent Spohn reports.

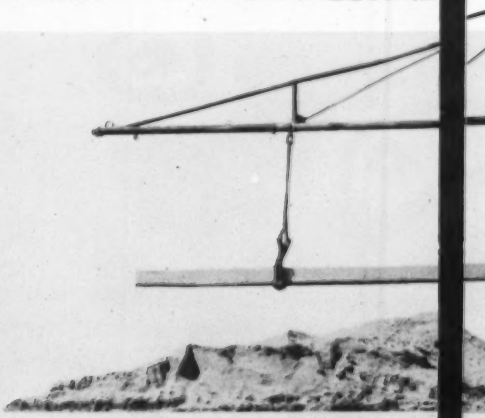


LORAIN ON THE MOVE

LORAIN'S ADVANCE

75-TON MOTO-CRANE HELPS HANDLE 2,040 TONS OF STEEL . . . as it works on an Anaconda Copper conveyor system in Montana. This Moto-Crane uses a 120 foot boom with a 30 foot tip extension for high lifts . . . walks all over the job . . . even travels under 20 foot high telephone wires.

2½-YARD SHOVEL CHEWS INTO 100 FOOT CUT. Working on the $8 million York by-pass in Pennsylvania, Lycoming Construction Company uses one of its Lorains to help move 1,000,000 yards of borrow. This is the 22nd Lorain purchased over the years by Lycoming.

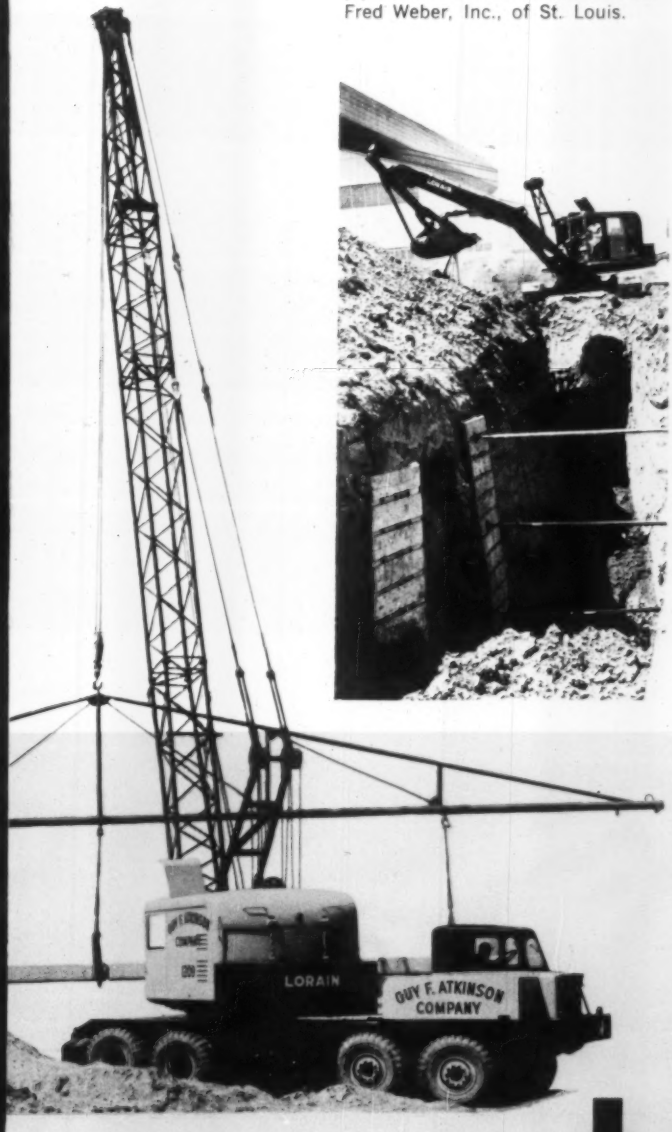


7-TON CRANE BUILDS GUARD WALL. A Lorain self-propelled crane owned by A. B. Torrence & Company, Inc., helps build a rock guard wall along a mountainous drive in Virginia. Equipped with a rock grab, this versatile Lorain carries and positions stones weighing as much as 3 tons.

DESIGN PAYS OFF ON A WIDE RANGE OF CONSTRUCTION JOBS

1¼-YARD HOE TRENCHES ALONG EXPRESSWAY. Mounted on extra-wide crawlers for an overall width of 13 feet, this sure footed Lorain is shown digging 3½ to 10 foot wide trenches for concrete drainage pipe. This is the ninth Lorain for Fred Weber, Inc., of St. Louis.

¾-YARD CLAMSHELL HANDLES 1,300 YARDS A DAY. This is the output of the Lorain owned by Neitring's City Coal Dock of Grand Haven, Michigan as it supplies fill for bridge approaches. The 35 foot, square-tubular-chord boom cuts down on conventional boom weight, boosts lifting capacity, lengthens reach.



35-TON CRANE CARRIES PILES THROUGH SAND. Picking up 7-ton pre-cast concrete piles, carrying them 300 feet through soft sand to a bridge site near Los Angeles—that's what this maneuverable Lorain did 48 times daily for Guy F. Atkinson Company, purchaser of 18 Lorains.

LORAIN

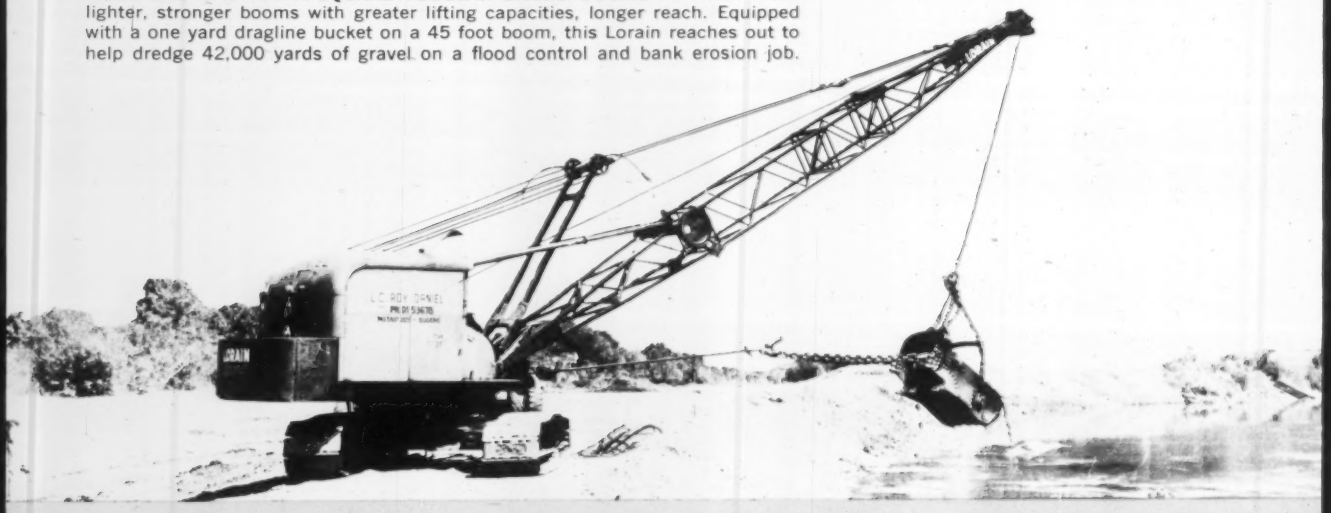
THE THEW SHOVEL COMPANY, LORAIN, OHIO

PACE SETTING FEATURES TO CUT YOUR COSTS...SPEED YOUR JOBS

FIRST WITH RUBBER TIRE CARRIERS . . . that establish new standards of high speed mobility and maneuverability. This 15-ton Moto-Crane really gets around unloading and erecting sections for pre-fab homes. Erection time for the sides, interior walls and roof totaled 6½ hours per house and crane work was complete in just four hours.

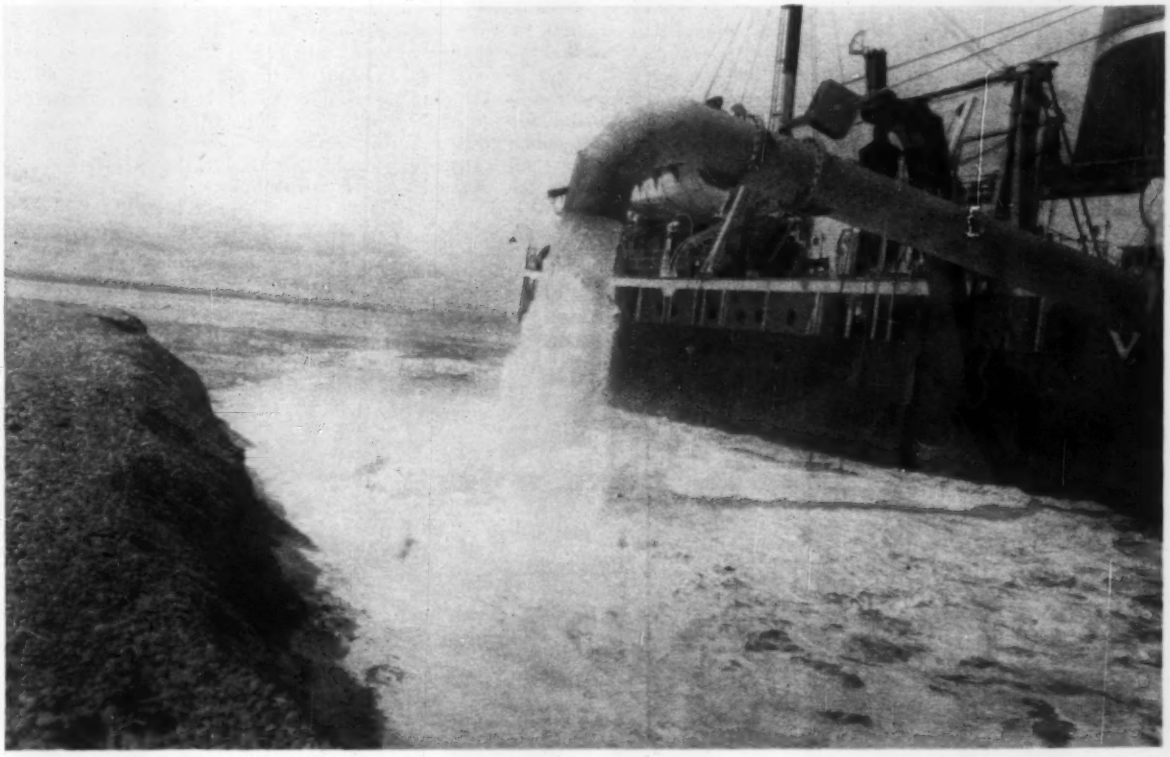
FIRST AND ONLY WITH "JOY-STICK" CONTROL . . . with only two levers needed to operate a metered air power system for smoother, more responsive control. Here's "Joy-Stick" in action as R. E. Waltan puts his one yard Lorain shovel to work digging shale and limestone on a Kentucky road project.

FIRST AND ONLY WITH SQUARE TUBULAR CHORD BOOMS . . . that mean lighter, stronger booms with greater lifting capacities, longer reach. Equipped with a one yard dragline bucket on a 45 foot boom, this Lorain reaches out to help dredge 42,000 yards of gravel on a flood control and bank erosion job.



LORAIN

THE THEW SHOVEL COMPANY, LORAIN, OHIO



Dredge Jets Channel With Discharge Pipe

The U. S. Corps of Engineers has found a brand new use for the discharge "snorkel" on one of its dredges. The pipe is serving as a huge jet nozzle, directing an earth-loosening stream of water against bottom and bank to make the material easy to suck up.

The jetting method already has been used to clear an 8,700 ft long ship channel at Harmon Air Force Base, a Strategic Air Command outpost in Newfoundland, and is now being used for a similar job at Goose Bay AFB, another SAC installation.

The vessel is the *Comber*, a 352 ft seagoing hopper dredge commissioned in 1947. Its usual field of operations is the Delaware River, where it keeps the navigation channel clear. But it has been doing such a good job there that the Philadelphia District was able to let it go temporarily when the Newfoundland tasks came up.

Since the last previous dredging at Harmon in 1952, the channel had shoaled up considerably. Width had shrunk from 200 ft to 100 ft and depth from 33 to 30 ft. And along one stretch, slides from the high slopes had built up the bottom to two feet above mean low water.

Normal procedure for the *Comber* in the Delaware is to suck up material from the channel bottom with both dragheads to fill the vessel's hoppers. It then transfers the material through the discharge pipe to a sump vessel, which disposes of the material.

But Capt. Robert Hughes, master of the dredge, had another idea for the Newfoundland job. He coupled one of the draghead suction pipes directly to the discharge pipe, bypassing the hoppers. Hoisting this draghead clear of the bottom, he used it as a water intake for the discharge pipe. He then jetted the water against the bottom or bank. The other draghead functioned as usual, sucking up the jet-loosened soil into the hoppers. When the hoppers were full, the dredge moved out to sea and bottom dumped.

The discharge pipe is 38 in. in diameter. Ordinarily it discharges a slurry weighing about 80 lb per cu ft at 11 ft per second. Velocity steps up to 20 ft per second with plain water (62½ lb per cu ft).

The material dredged at Harmon AFB consisted of silt and fine sand, overlain by a crust of clay and small boulders. Quantity removed totaled 400,000 cu yd.

According to Col. William F. Powers, Philadelphia District Engineer, the Goose Bay job is proving to be somewhat tougher than the one at Harmon. Two miles of channel are shoaled, and the worst 1,000 ft length is only 19 ft deep—about the same as *Comber*'s draft empty, four feet shallower than the loaded draft. It would normally be a job for a pipeline dredge with a cutter head, but Captain Hughes is plowing through the top couple of inches of shoal, making *Comber* do the job. This plowing isn't the way they would like to do the job, Colonel Powers says, but under the existing circumstances, it is found to be the best way.

Pipeline dredge floated up from the U. S. was the alternate equipment to *Comber* for both the Newfoundland jobs. But the Corps ruled it out because of the high cost of preparing it for the sea voyage. Preparation would

BRITISH ENGINEERING COMPANY SEEKS LICENSE TO MANUFACTURE AMERICAN ROAD-LAYING MACHINE OR EQUIPMENT ALLIED TO ROAD BUILDING

Sole Selling Agency for U.K. would be considered as alternative

Adequate manufacturing facilities available

APPLY JOHN CURRAN LTD.
CURRAN ROAD,
CARDIFF,
GREAT BRITAIN.

In the field, at the job or in the office

PLAN HOLD
CADDY RACK

with folding table

Efficient vertical file and mobile conveyance all in one. Holds 1200 prints, plans, maps, other large sheets... organized for instant identification and use. Sheets can't get mislaid or lost... no folding, rolling or stacking.

PLAN HOLD Vertical Files, Binders, Cabinets and Racks are distributed internationally. See them at your engineering and office supply dealer or write for Catalog 582 to Plan Hold Corp., South Gate, California.

have taken 45 days for the trip each way plus time required to strip the craft for work. *Comber*, on the other hand, is a seagoing vessel.

A further consideration in deciding against a pipeline dredge was the likelihood of higher maintenance costs and more frequent need for spare parts.

Once *Comber* was picked, it could have been used in a more conventional manner. Material at the base of the bank could have been dredged up, thus causing the bank to slough off. This procedure could have been continued until the required width and depth were reached. However, the jetting experiment worked to the engineers' complete satisfaction.

Amphibious Rig Samples Soils

Underwater soil sampling is made easier and faster by a drilling rig developed by Soil Testing Services, Inc., of Chicago. It combines contemporary soil-sampling techniques with the roadability and floatability of the war-developed amphibious "duck."

The highly mobile drilling unit travels along the highway at a maximum speed of 40 mph to the site of an investigation project. There it is driven into the water and moved by a propeller at 10 mph to the boring location. It eliminates the tedious operation of assembling and disassembling portable barges for water boring projects or the necessity of renting barges and launches.

As shown in the photo, a core drill rig with a 27 hp air-cooled engine is mounted behind the cockpit. The rig will obtain soil samples or "NX" rock cores to a maximum depth of about 200 ft.

The "duck" has deflatable tires for traversing soft ground, with well constructed pontoons to provide stability in the water. It is propelled by the 135 hp engine of a GMC 6x6 truck, about which the pontoons and propeller assemblies are built.

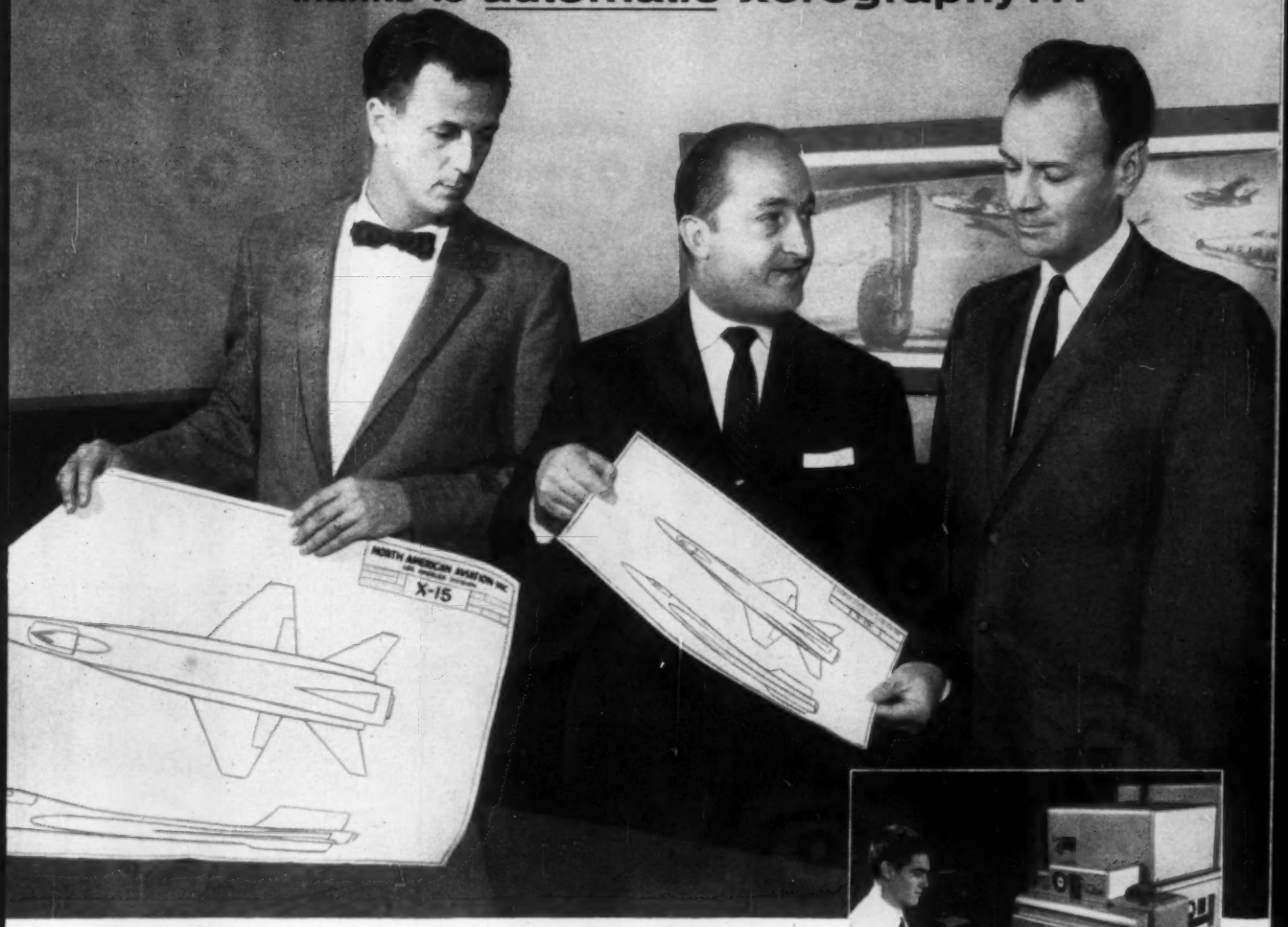
In order to provide additional stability during the drilling operations, three spuds are welded to the two sides and the rear. The entire unit can be raised up on the spuds to develop maximum load transfer to the spuds.

An 8 in. pipe sleeve is welded adjacent to the propeller shaft through which the drilling operation takes place. The upper part of this sleeve is located about 1 ft above the high water mark when the unit is floating fully loaded.

The drilling rig has a hydraulic feed for getting undisturbed "Shelby" tube samples for obtaining undisturbed samples of clay and silts. Equipment also is provided for vane shear testing as well as undisturbed piston sampling.

The equipment originally was developed for soil investigation work this year on Chicago's proposed Metropolitan Fair and Exposition Hall at 23rd St. and Lake Michigan. It also has been used on an investigation at Acme Steel Co.'s new mill in Riverdale, Ill.

thanks to **automatic** xerography . . .



Above: Harrison Storms, right, chief engineer at North American Aviation's Los Angeles division, examines 11" wide engineering-drawing reduction of the company's rocket-powered X-15 made xerographically on XeroX Copyflo 11 continuous printer. Buzz Holland, center, manager of photographic and reproduction services, explains process to Storms while Mark Keith, reproduction supervisor, holds 24" x 36" original drawing.

Inset: Ron Crawford inserts a 24" wide original drawing into Copyflo printer, which within seconds will deliver a dry, positive print into tray below.

North American Aviation *SAVES* $100,000 Yearly

North American Aviation, Inc., has figuratively gone supersonic in the rapid reproduction of engineering prints for high-speed aircraft.

This widely known aviation firm is one of the first in its field to install a XeroX® Copyflo® continuous printer, an ingenious machine that copies thousands of *different* drawings in a normal working day. Positive prints up to 11" wide emerge dry, ready for immediate use, at the rate of 20 linear feet a minute—a print in less than three seconds!

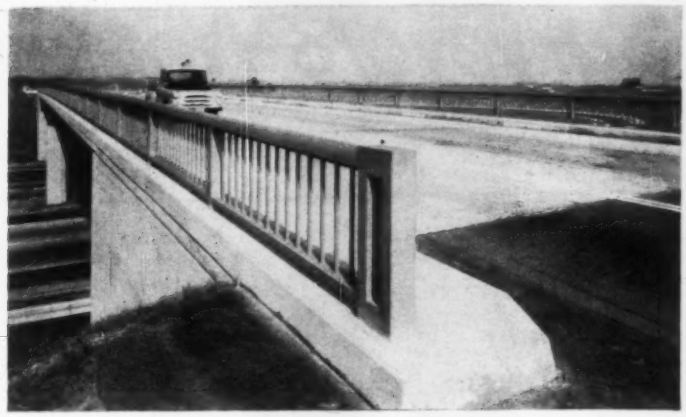
North American Aviation, Inc., is saving more than $100,000 annually through automatic xerographic copying, easily paying for the equipment the first year.

The Copyflo continuous printer accepts original documents or drawings up to 24 inches wide and of any length, and reduces or enlarges them to a maximum width of 11 inches. Copies are on plain unsensitized paper, offset paper masters, or translucent vellum. Originals may be in type, pencil, colored ink, or on tinted paper, yet copies will be precisely like the originals.

Simply push a button—and copies flow. Through versatile xerography—clean, fast, dry, electrostatic—Copyflo printers offer the speediest, most flexible, most economical way to get sharp, clear copies from all types of original documents or from microfilm.

For complete information write Haloid Xerox Inc., 58-135X Haloid St., Rochester 3, N. Y. Branch offices in principal U. S. and Canadian cities.

HALOID XEROX®



For simplicity of design and availability you can count on USS Structural Steel

It is generally accepted that the best design is the *simplest* design. This is especially true in bridges.

A clean, simple structure indicates that the designer refused to use one extra pound of material. He had a clear understanding of fabrication problems, so he carefully eliminated excess joints. He knew that *men* had to do the erection, so he selected familiar, easy-to-work-with materials.

For these reasons, most designers prefer to work with steel.

Steel is the most versatile of all building materials. It can be punched, sheared, hot-worked, welded, flame-cut, riveted or bolted. Members can be fabricated in the shop and erected in practically any kind of weather. It is unsurpassed for strength and impact resistance, and is available in a great range of shapes, sizes and strengths.

Long before the Interstate Highways Program was suggested, the steel industry saw the growing need for structural shapes and plates. New facilities were planned, and today they are steadily coming into production. Bridges that are on the drawing board today can count on these new facilities. Now, more than ever before, you can design with the material you know best, the material that offers the most—*you can count on steel.*

USS
TRADEMARK

United States Steel Corporation – Pittsburgh
Columbia-Geneva Steel – San Francisco
Tennessee Coal & Iron – Fairfield, Alabama
United States Steel Supply – Steel Service Centers
United States Steel Export Company

United States Steel

KEEP OUR ROADS ON THE GO

The Surveyor's Notebook

Reporting on Unusual Surveying Problems and Their Solutions

Notekeeper: W. & L. E. Gurley, America's Oldest Engineering Instrument Maker

How to prove a point ...about a point...with an Optical Plummet Transit

William Dryburgh sights through his new Gurley Optical Plummet Transit.

One windy day, William A. Dryburgh, engineer in charge at the job site of a Detroit construction project, had established a point using a conventional plumb bob. A check on his set-up was important to its later use for tying in. A new Gurley Optical Plummet Transit, just demonstrated to him and to Robert Bryant, of Bryant and Detwiler Construction Company, was on hand.

Setting up the new instrument over his point, he leveled up. Sighting in the Optical Plummet, he used the built-in shifting head tripod to bring the instrument directly over the point.

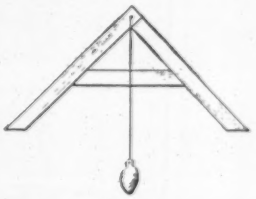
Satisfied that the instrument had remained level during shifting, he then took a sight on a target through his main telescope. Next he flipped his telescope without moving its upper or lower motion, taking a back sight on a target placed on the building behind him. His back sight did not check.

Double centering proved the instrument's perfect adjustment. Checking its levelness, he again tried fore and back sight with the same result. An obvious error existed; so he proceeded to "buck in" the Optical Plummet Transit from the targets, and found he had an error as established by his plumb bob. *Result: He kept the Optical Plummet Transit.*

The plumb bob has served men well for thousands of years. Changed very little since the Egyptian pyramid builders used it, its swing and sway can be exasperating—especially on windy locations. It is essentially inaccurate.

Gurley Optical Plummet Transits replace the outdated cord and bob with a method deriving precision from accuracy intrinsic in the laws of optics. Readings are instantaneous. Wind cannot blow it out of vertical—there is nothing to swing or gyrate. The built-in shifting head allows a 2-inch shift of instrument over point, giving ample leeway in initial set-up. Rotating the instrument 180 degrees assures you of positive centering. *Write for new Bulletin OP-100.*

Plummet level and leveling A-frame as used by the ancient Egyptians.



Ask to See the Variable Power Eyepiece

Variable Power is now *standard* on Gurley Optical Plummet Transits—and all other Gurley Transits and Levels. With "VP" you go from high to low and back again—with stops anywhere in between.

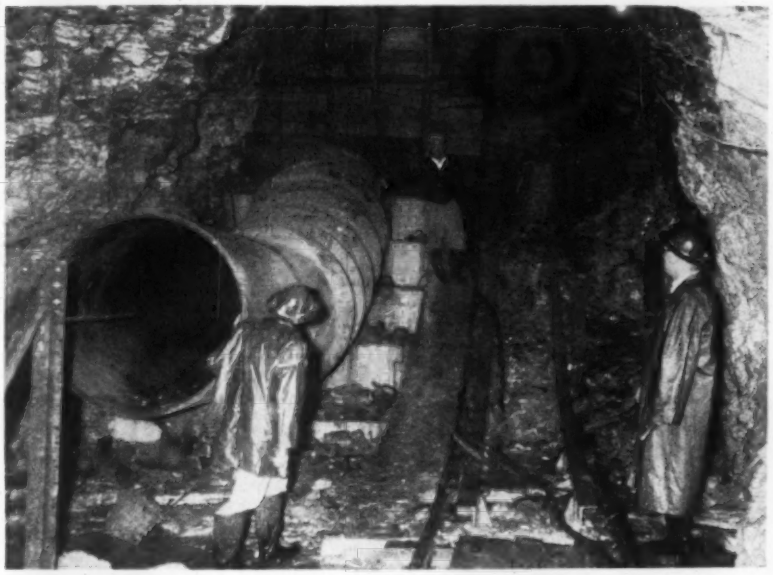
"VP" offers a clear, flat field, devoid of aberrations at any magnification. You have all the power required for the longest sight, and reduced power for local conditions. You will find visibility under poor lighting can be improved by use of lower magnification. Turbulent effect of heat waves is minimized with lower power. Write for "Facts on VP".

GURLEY

Surveying and Scientific Instrument Makers
Since 1845

W. & L. E. GURLEY, UNION PLAZA, TROY, N. Y.

Engineering and Surveying Instruments, Hydrological and Meteorological Instruments, Paper Testing Instruments, Optical Instruments, Reticle Manufacturing Facilities, Standard Weights and Measures



BOTTOM ELBOW of high-strength steel pipe was the first to be installed.

Lung Chien Penstock Finished

A. E. Niederhoff
Senior Hydraulic Engineer
J. G. White Engineering Corp.
New York City

Nearly a mile of high-strength steel penstock is now welded in place at Formosa's Lung Chien hydro project. The conduit will channel the highest flow in the Far East—2,800 ft effective head—from a reservoir high in the east coast mountains to an underground powerhouse carved out of rock.

The project will cost $8 million, financed through the International Cooperation Administration. It will supply an estimated 111 million kwh of energy annually to Formosa's power-hungry industries.

• **Steep tunnel**—The penstock drops most of the way down through the mountain on a 45 deg incline. The tunnel is a 15 ft wide, 10 ft high unlined section, blasted out of rock. Half the width is occupied by concrete piers and anchor blocks for the steel tube, the other half by skip-hoist tracks.

PENSTOCK PIPE was shipped to job in 26 ft lengths, 3.6 to 4.6 ft in diameter.

The pipe came to the job in 26 ft lengths, 3.6 to 4.6 ft in diameter. Prewelding operations were carried out in a temporary shelter at the mouth of the tailrace tunnel. Butt ends were wire brushed to remove rust. Pipe areas to be concealed by the concrete supporting structures were sand blasted to bright metal and coated with zinc. Then the sections were trucked through the tailrace tunnel to the foot of the 45 deg tunnel.

The same route, incidentally, was followed by the powerhouse machinery. Other access was impracticable because of the precipitous terrain.

Penstock sections were hauled up the inclined tunnel on flat cars coupled to skip-hoist cars. Final positioning, with butt ends 0.14 to 0.20 in. apart, was achieved by the use of cables, coffin hoists, jacks and wood shoring.

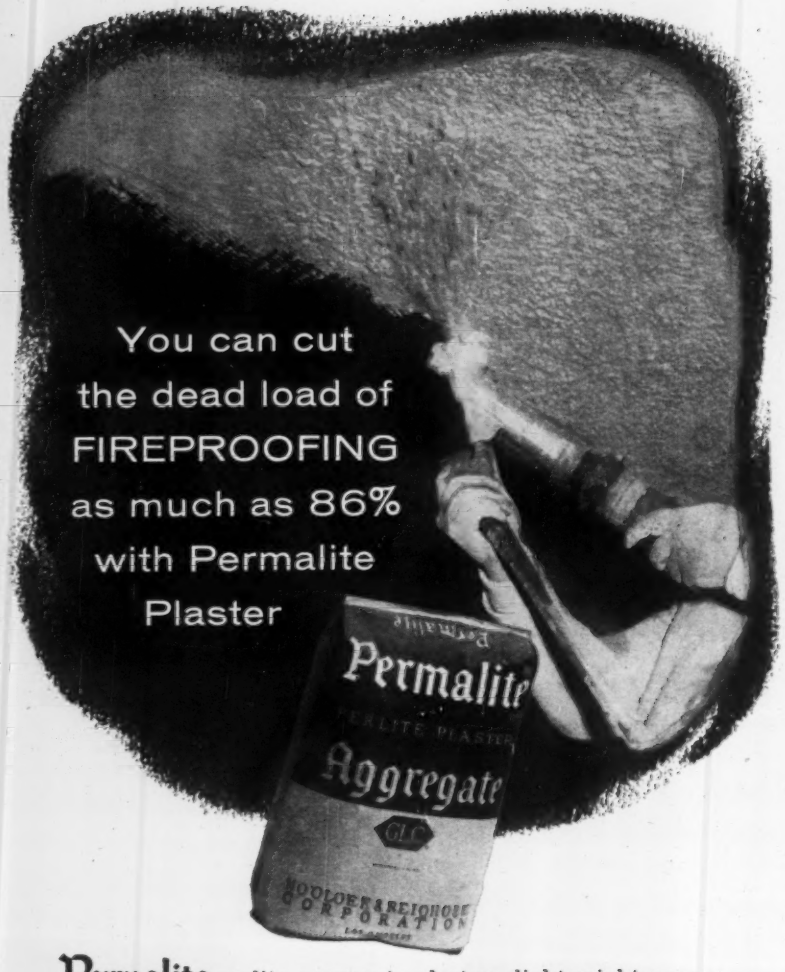
Erection of the penstock began with the bottom elbow and proceeded upward. Expansion-joint sections—six in all—were omitted until last to allow access and ventilation. A blower at the bottom of each stretch of 20 or 30 sections supplied fresh air.

• **Welding procedure**—Welders started on a joint by making four tack welds on the inside periphery to hold the ends in position. Then they ran an inside bead with a mild steel electrode. Beginning at the invert they worked up both sides in more or less equal increments to the top. Most of this initial bead was later ground out with a thin emery wheel from the outside to remove slag and rough surfaces. The final inside bead, and all other permanent welding, was done with a German manufactured welding rod designated Fox EV50, $\frac{1}{8}$ in. dia. (A German firm held the penstock contract.) German welders reportedly prefer this electrode for such hard-to-weld high-strength German alloys as ST50, ST52, ST60 and ST70.

Outside welding also was begun at the bottom of the pipe. Two welders worked around the joint to the top in opposite directions, while maintaining their progress on both sides at the same height.

Grinding a joint took about four hours, inside welding four hours and outside welding (five beads for sections 1.3 in. thick) nine hours. According to a rule-of-thumb for estimating the time required to weld a girth joint manually, man-hr = dia in meters × thickness in mm. Joints on this job took only about 80% that long.

(Continued p. 112)



Permalite perlite aggregate plaster—lightweight, easy-working—is the lightest, thinnest and most economical fireproofing for all structural steel... and it gives you your basecoat for interior finishing at the same time.

WEIGHT? An example—1¾" thickness of Permalite plaster on self-furring metal lath gains a 4-hour fire rating... yet on a 10" column weighs only 33 lbs/lineal column foot. The same fire rating gained with concrete requires a 3" minimum thickness, and weighs 249 lbs/lineal column foot.

ECONOMY? Fireproofing with Permalite plaster requires no expensive, time-consuming forms and is quickly and easily applied by hand or machine.

APPROVAL? UL-approved Permalite used as aggregate in job-mixed plaster qualifies for more than 50 UL fire ratings.

See your Sweets File—ask your nearest Permalite franchisee—or write for complete information

Permalite | THE LARGEST SELLING PERLITE AGGREGATE IN THE WORLD

Perlite Department, Great Lakes Carbon Corp., 612 S. Flower St., Los Angeles 17, Calif.

Permalite aggregate is produced by licensed franchisees from perlite ore mined by Great Lakes Carbon Corporation.

. . . International

• **Annealed at 650 C**—Heat for stress relieving the welds was supplied by d-c coils wrapped around the joints after erection of the penstock. A 12 in. strip around the joint was brought up to 650 C over a period of an hour, kept that hot for 40 minutes and then allowed to cool naturally for six hours. Annealing was not required for sections up to ¾ in. thick.

The annealing caused considerable delays in the other operations. First, treatment of each joint tied up the skip hoist and prevented movement of more penstock sections for nearly 26 hours—the actual period of heat application plus 24 hours additional required to haul the generator up the tunnel to the joint, level it and haul it back. Second, wiring was too light to carry current for both welding and annealing at the same time.

The procedure finally adopted was to weld all the sections in the lower half of the penstock, then anneal continuously. Meanwhile, the welders stood by and the erection crew positioned the sections of the upper half.

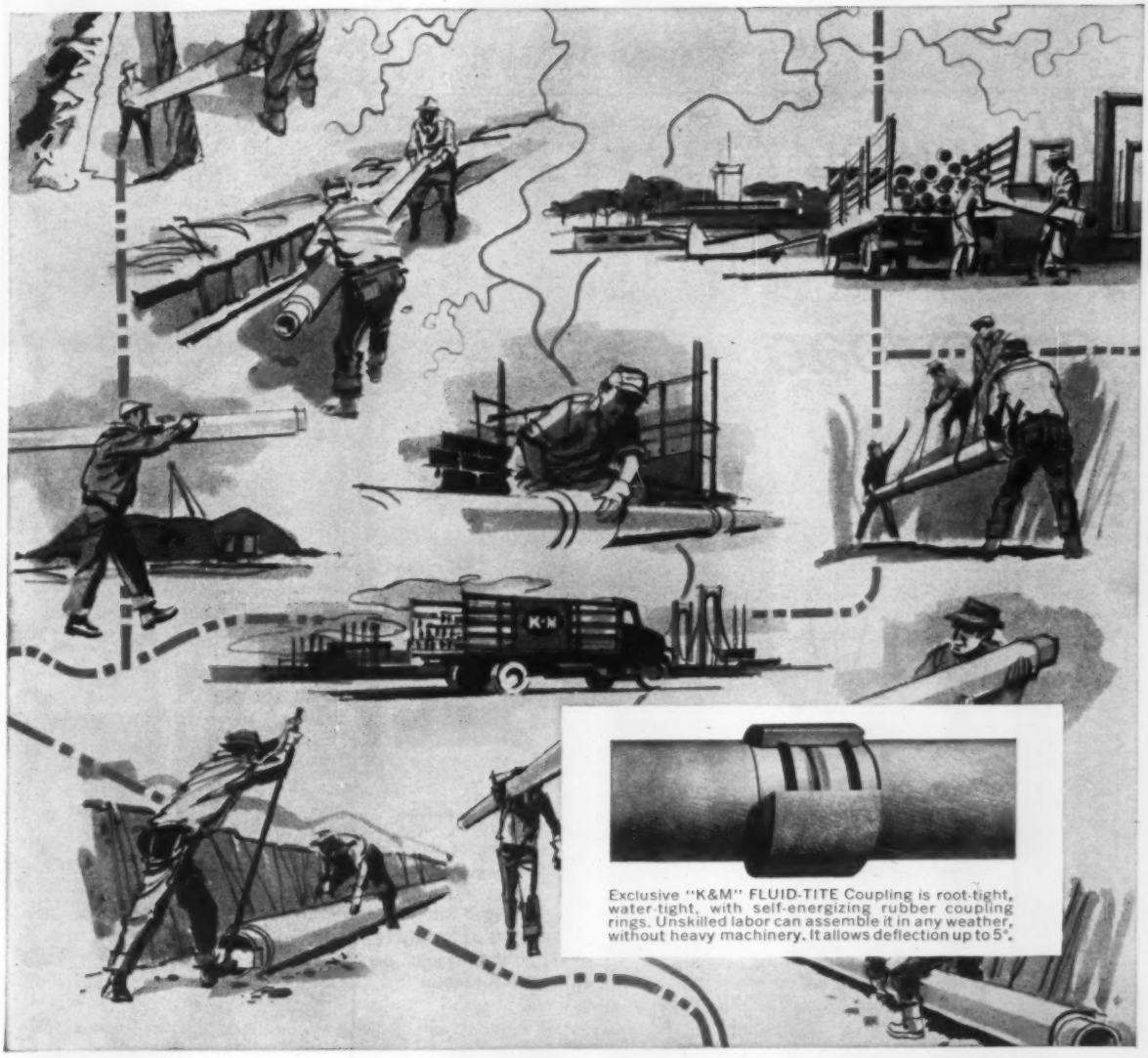
• **Gamma ray inspection**—Welds were inspected by means of gamma ray photography. A film strip was wound around the outside of the pipe at the joint and exposed by a radioactive cobalt 60 ball suspended inside the pipe.

Mannesman Co., of Dusseldorf, Germany, held the contract for design, fabrication and erection of the penstock. Welding was done by a German and Chinese crew under a German superintendent. Construction was by Chinese labor contractors under supervision of Hui Huang, Y. S. Sun and David Chu, president, chief engineer and project engineer, respectively, of the Taiwan Power Co. Two impulse-type turbines were supplied by Neyrpic, of Grenoble, France. The 48,000 kw generator was supplied by Mitsubishi, Kobe, Japan. General engineering supervision was furnished by J. G. White Engineering Corp., New York City.

Mexico City Sets Stage For World Road Meeting

Over 50 nations will be represented at the 3rd world meeting of International Road Federation, according to International Road Federation, Washington, D. C. The meeting, to be held in Mexico City, October 26-31, will hear papers and discussions on all aspects of highways.

Thirty-six highway equipment manufacturers from Germany, Great Britain, Latin America, Mexico, Sweden and the U. S. will display roadbuilding equipment at the meeting's road show.



Exclusive "K&M" FLUID-TITE Coupling is root-tight, water-tight, with self-energizing rubber coupling rings. Unskilled labor can assemble it in any weather, without heavy machinery. It allows deflection up to 5°.

FROM KEY WEST TO L.A.

Modern communities are joining the trend to the modern pipe—

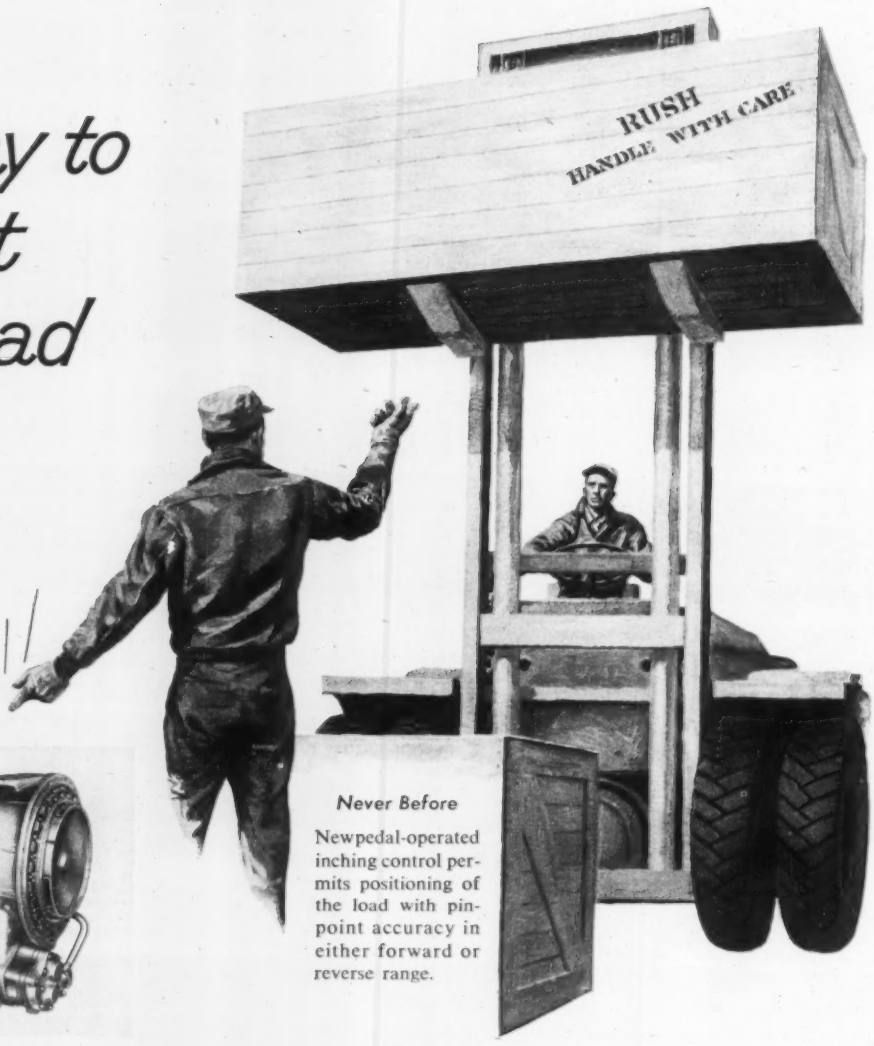
"K & M" ASBESTOS-CEMENT PRESSURE PIPE with FLUID-TITE COUPLING

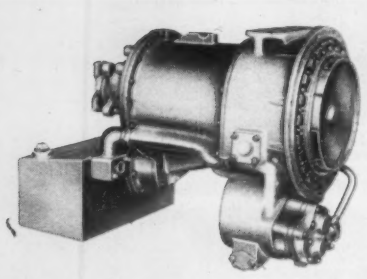
• Permanent, root-tight, water-tight connections • Non-tuberculating • Non-electrolytic • Corrosion-resistant • Longer sections—fewer joints • Pumping costs remain low • Your low first cost is often your last cost.

K·M
BEST IN ASBESTOS

KEASBEY & MATTISON
COMPANY • AMBLER • PENNSYLVANIA

New way to pinpoint a payload





Never Before

Newpedal-operated inching control permits positioning of the load with pinpoint accuracy in either forward or reverse range.

Now Allison TORQMATIC DRIVE brings new power, ease and precision to big fork-lift trucks

Now, for the first time, here is a full power-shift transmission for giant fork-lift trucks.

It's the new TORQMATIC CRT-3331-3—specially designed to handle maximum engine torque in vehicles with limited chassis space, such as fork-lifts, underground ore carriers and other material handlers.

Its converter multiplies engine torque up to 350%—delivers this power with silken smoothness—eliminates load-tipping jolts.

Its proved-on-the-job planetary transmission lets you shift under full power in all speeds—3 forward and 3 reverse—for faster work cycles.

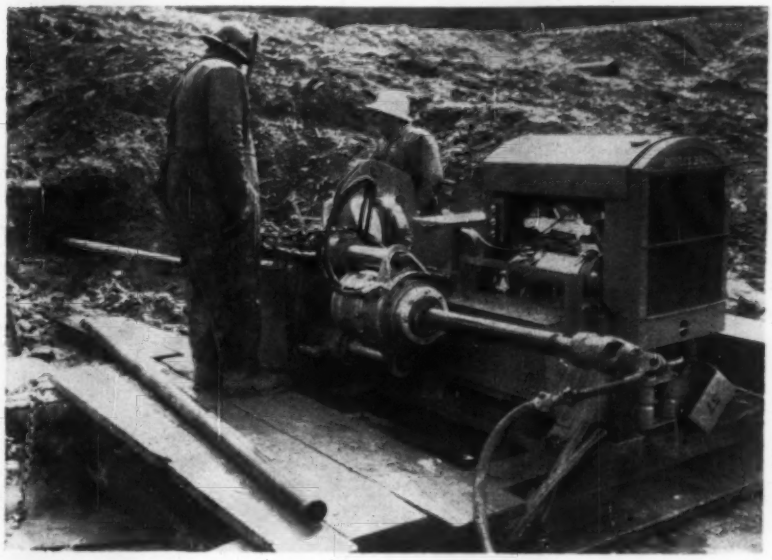
The exclusive oil-cushioned inching control permits enviable precision and accuracy—saves you time, money and equipment.

For truly modern, materials handling equipment, it will pay you to get the Allison TORQMATIC story.

Ask your equipment dealer, or write:

ALLISON DIVISION OF GENERAL MOTORS, Indianapolis 6, Indiana

Allison TORQMATIC **TORQMATIC DRIVES**



LOW RIG for drilling horizontal holes is called Slidemaster.

Drill Puts Drains in Fills

In evolving its new "Slidemaster"—a horizontal drilling machine to meet demands of highway and railroad construction—Boyles Bros. Drilling Co., Ltd., of Vancouver, B. C., went back into the company's World War II "top-secret" files.

The new diesel-powered machine, mounting hydraulic chuck and hydraulic swivel head, had its beginnings in Boyles Bros. special "Sidemount" machines used to drill 4 in. dia demolition-charge holes horizontally beneath airfields to destroy them in case of invasion.

Now, the growing need for horizontal or shallow-angled holes in highway or railway fills, to establish effective drainage, has led Boyles to develop the machine further. One design feature is that it reduces ground clearance required for horizontal bores to a 19 in. minimum (compared to 35 in. for a standard machine), thus eliminating the need to excavate when the hole must be drilled close to grade. The hydraulic head swivels to drill at any angle; if the unit is truck-mounted or raised on timbers, it may be used as a conventional diamond drill.

Another point important to drainage people is that because of the large diameter tubing that can be passed through the chuck and drive tube, the drill string can be left in and the drainage pipe inserted before drill rods are withdrawn so there is no possibility of the hole caving in while the drainage pipe is being inserted.

The Slidemaster's general construction is of skid type frame incorporating guide sheaves and fair leads for moving the drill under its own power. The 4,440 lb machine is 106 in. long, 53 in. wide and 49 in. high.

Powered by a Perkins PV4, 45 hp four-cylinder diesel engine, it also could be driven by a four-cylinder Hercules gas engine. It has a heavy duty transmission, four speeds and reverse.

There is a sheave wheel and cable guide bracket for opening and closing the swivel head, which is a twin hydraulic BUS-34HH model accommodating up to 3½ in. OD tubing through the drive tube.

Drill angle range is 360 deg, stroke 40 in., and cylinder I.D.5 in. The hydraulic chuck is self-centering, power operated for fast and simple operation, and the entire hydraulic system is the self-contained closed circuit type, using a variable pressure Racine oil pump with automatic governor controlled output for minimum power consumption.

Slidemaster was first tested successfully by Boyles Bros. on contracts of the British Columbia's department of highways. It is now in service on its third such trial installation. BOYLE BROS. DRILLING CO., LTD., 1291 PARKER ST., VANCOUVER, B. C.

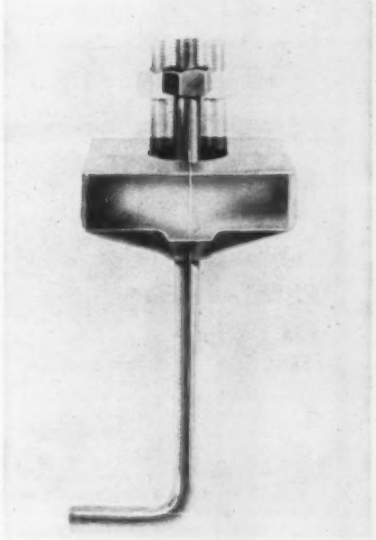
Automatic Dragline Bucket Gives Increased Payloads

Automatic dragline buckets for sand and gravel quarrying fields feature longer and higher baskets and carry out more payload per swing.

The new buckets also use a shorter dump rope that throws the front end of the bucket back sharply when hoisting to prevent spilling material. This makes the bucket useful in underwater digging, where the material tends to flow with the water in a direct line from the rear top of the basket to the lip.

It's constructed of USS T-1 steel, which has a strength three times that of ordinary steel. The bucket is said to offer greater life with less repair and maintenance. Its abrasion-resistance makes it ideally suited for sand and gravel digging operations.

Buckets are available with or without perforations, in sizes from ¼ cu yd up. PAGE ENGINEERING CO., CLEARING POST OFFICE, CHICAGO 38, ILL.



New Anchor Bolt Fitting Is Flush With the Floor

To avoid obstruction to movement during construction due to anchor-bolt projections above floors, a new anchor bolt has been developed that is flush with the floor until actual installation of equipment or columns is made. Called a Deco anchor bolt, it consists of the anchor, a box-like fitting attached to its top, and an oblong nut on the anchor inside the fitting.

(*New Products continued p. 116*)

COSTS ESTIMATE THEM PROPERLY

Roche Estimating Methods

Developed through FIFTY YEARS of application to over SIX BILLION DOLLARS of General Engineering and Heavy Building Construction Work, domestic and foreign. Practical, dependable and *never out of date*. Over 500 Copyholders.

A Complete Estimating System

ONE HUNDRED DOLLARS ($100.00) per Copy. All shipping charges prepaid delivered anywhere in the world served by parcel post or air express, with foreign sales subject to export permits, import duties and transaction charges.

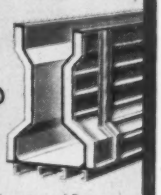
STANDARDIZE YOUR ESTIMATES

Order your Copy of ROCHE ESTIMATING METHODS Construction Report No. 32—Premium Edition—One Volume 704 Pages 8½" x 11" leatherette binding with marginal index.

AVAILABLE ONLY FROM

W. EARL ROCHE
Construction Consultant
128 Western Ave., Glendale 1, California

ECONOMY STEEL FORMS for precast PRESTRESSED concrete



Above: Skeleton drawing of Economy Steel Forms used in producing standard AASHO precast-pretensioned highway beams.

With Economy Steel Forms, you can get into the profitable precast prestressed concrete business with a moderate investment. Send coupon below for catalog.

OTHER FORMS FOR RENTAL OR PURCHASE

Economy Forms Corp.
Box 128, H. P. Station
Des Moines, Iowa

A

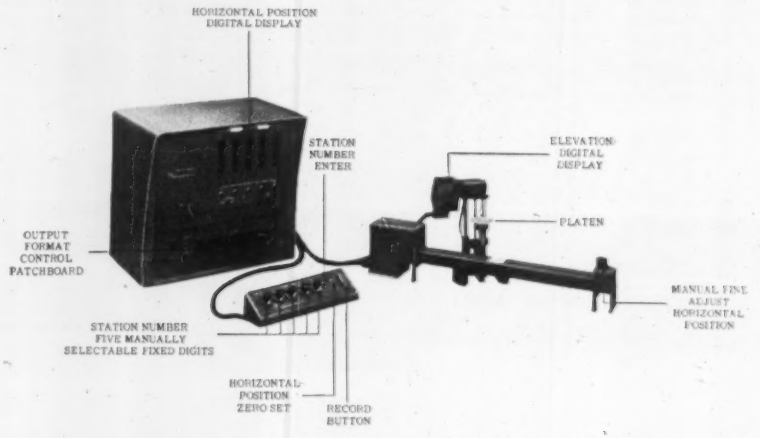
Please send catalog on Economy Steel Forms for precast prestressed concrete, as well as address of nearest sales office.

Name_____
Firm name_____
Street address_____
City_____ State_____

The nut is movable in all directions, permitting adjustment for the usual tolerance in setting anchor bolts. When a machine or column is ready to be attached, a threaded stud of the desired length is inserted into the box and screwed into the oblong nut. Because the stud for attaching the machine or column is removable, projection of the anchor above the floor is eliminated.

The new anchor bolt is reported to be no more difficult to install than ordinary bolts. A temporary washer is centered in the flush area of the box fitting to protect the movable nut during placement of concrete.

Deco Anchors are available as fittings only or complete with anchor bolt and stud in ⅜ in. to 1½ in. dia in ⅛ in. increments. DECATUR ENGINEERING CO., DEPT. P. 519 E. WILLIAM ST., DECATUR, ILL.



It Takes Computer Data from Air Photos

This attachment to a standard photogrammetrist's plotter can, at the press of a button, automatically record all the coordinates of any setting. Thus, after a plotter operator has focused his "dot," the ground elevation and both horizontal coordinates can be produced automatically in the form of punched paper tape, punched cards and/or typewritten copy. This output is suitable for direct insertion in an electronic computer or a continuous-line plotter.

Eliminating the need of manual measurement of horizontal distance on aerial photographs and the human transmission of both horizontal and elevation coordinates saves considerable plotter-operator time and many errors due to human handling of the data. This is the experience of several aerial photogrammetry firms that have had custom devices, such as the attachment being described here, built for their plotters. ENR has observed a top-notch plotter operator, using one of the custom devices, reading a cross section line at the rate of 1.5 seconds a point.

The attachment, named the Terrain Data Translator, actually keeps track of only two of the three coordinates of a point—the z (vertical) and y (horizontal) distances. The unit simply translates the movement of the platen in the z and y directions by electromechanical means into digital information.

The TDT is initially positioned perpendicular to some axis, usually the trial alignment of a highway, which sets the x coordinate. All three coordinates of a point can thus be recorded at the touch of a button.

The TDT has a travel of 20 in. horizontally on a plotting table and 5 in. vertical. It can be used with photography scaled to 50, 100 and 200 ft to the inch. Basic price of TDT is $7,350. BENSON-LEHNER CORP., 11930 W. OLYMPIC BLVD., LOS ANGELES 64, CALIF.

One-Man Compactors Come In 1 and 1½ Ton Sizes

One-man vibratory compactors are offered in two sizes by Master.

The C-12 weighs 236 lb, is powered by a 3.5 hp engine and is said to have a compacting force of 2,300 one-ton blows per minute. It is equipped with semi-pneumatic wheels and can be used with shoes of 12, 18 and 24 in. size, or with a special asphalt water plate.

A larger unit, the C-46, weighs 435 lb. Its 4.2 hp engine will deliver a compacting force of 2,300 1½-ton blows per minute, says the manufacturer, and can be used with 24, 30 or 36 in. shoes. MASTER VIBRATOR CO., 1752 STANLEY AVE., DAYTON, OHIO.

(*New Products continued p. 120*)

Stemming a wet hole on Calumet-Sag Canal. Because of its water resistance and economy, Du Pont "Gelex" 1 was chosen for the job by Badgett Mining Stripping Corporation, subcontractors under S. G. Groves & Sons Co. for the U. S. Corps of Engineers.

How Du Pont "Gelex" does the job of widening "Destiny's Ditch"

Wet holes are common in the job of widening the Calumet-Sag Canal.

Nicknamed "Destiny's Ditch" because it links the Great Lakes with the Mississippi-Ohio-Missouri Waterways, the Canal is being widened from 60 to 225 feet to meet an expected increase of traffic from the St. Lawrence Seaway.

Due to the wet conditions, Du Pont "Gelex" 1 was first choice because it combines the economy of Du Pont "extra" dynamites with the water resistance and cohesiveness of gelatinized nitroglycerin. It loads well, produces high fragmentation, costs less than gelatin dynamites, and is applicable to a wide variety of work in quarries, mines and tunnels.

When *you* have a problem in blasting, your Du Pont representative can give you fast, qualified help in the planning, selection and placement of charges. The more exacting the job, the more you need him. Call him, or write to E. I. du Pont de Nemours & Co. (Inc.), Explosives Dept., Wilmington 98, Delaware.

DU PONT EXPLOSIVES

DU PONT *Blasting Supplies and Accessories*

Better Things for Better Living . . . *through Chemistry*

A-W Super 99 equipped with Torquematic Drive working in deep mud near Norfolk, Va. Machine is owned by Williams Paving Co., and is operated by Golden Barber.

"The Austin-Western works where

"The Austin-Western's all-wheel drive and all-wheel steer give it a big advantage over other graders," says Ed. Williams, v-p of Williams Paving Co., Norfolk, Va. "With its extra traction and maneuverability, the A-W works where other graders can't go. It is especially good for grading steep slopes and for getting in and out of tight places—for example, working around the stakes during last-stage grading.

"Another feature that makes the A-W a superior machine is its ease of operation. I am an operator myself, and I appreciate the quick, positive action of the hydraulic controls. Furthermore, as an owner, I like A-W's low operation and maintenance costs."

Some big A-W features. One of the reasons the A-W outperforms ordinary graders is extreme blade reach. From any normal operating position, you can extend the blade hydraulically into position to handle almost any type of job. Precision sideshift and circle sideshift give you unusual reach and by using all-wheel steer to offset the rear truck, you can obtain several extra feet of sideshift more than with competitive types. And all-wheel drive keeps the power of the grader balanced against the load, regardless of blade position, for added efficiency.

With an A-W, you can do precise finishing operations never before possible with a motor grader, quickly and

other graders can't go" says Ed. Williams, Williams Paving Co.

easily. Extra wide shoulders, as well as slopes of any kind, can be accurately finished without tire marks being left. Long slopes can be worked up from the bottom or down from the top with equal ease.

If you are a contractor that wants a long-term investment in efficiency, get the full story on Austin-Western today. Your nearby A-W distributor will be glad to arrange a convincing demonstration.

Austin-Western CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.

BALDWIN · LIMA · HAMILTON

Power graders • Motor sweepers • Road rollers • Hydraulic cranes

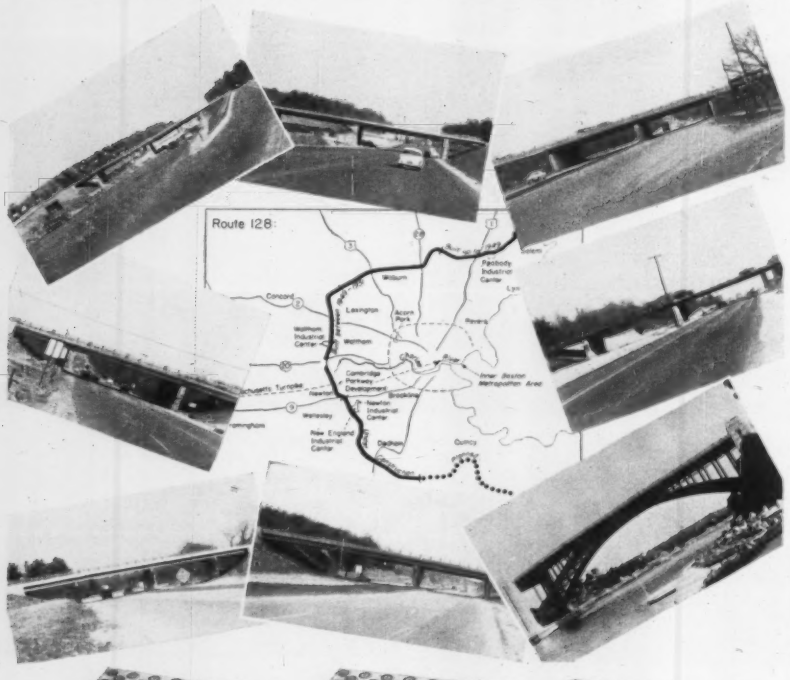
BALDWIN BLH LIMA-HAMILTON

Lubrite®

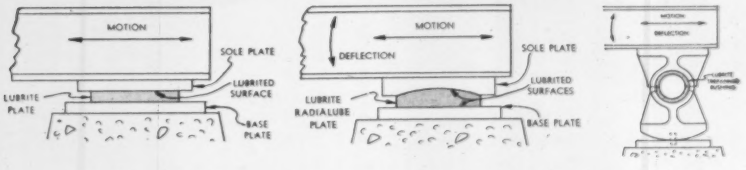
SELF-LUBRICATING SECURITY

SPECIFIED FOR BRIDGES ON THE BOSTON CIRCUMFERENTIAL HIGHWAY

ONE OF MASSACHUSETTS' MOST UP-TO-DATE, LIMITED ACCESS SUPER HIGHWAYS



3 BASIC LUBRITE ASSEMBLIES



Lubrite offers many distinct advantages to any bridge, overpass, building, or other construction where the problems of expansion, contraction and/or rotation of a structural member are factors in the design. Specifically, Lubrite offers simplified design, low known co-efficient of friction, reduction in construction costs and the virtual elimination of maintenance in bearing assemblies. Lubrite's fifty years of successes in all types of installations are your assurance of better results and longer life.

Send for this free 20-page Lubrite Manual No. 55 — it contains complete information, technical data and specifications about Lubrite Self-Lubricating Expansion Plates and Bushings. Write today!

LUBRITE DIVISION
MERRIMAN BROS., INC.
191 ARMORY STREET, BOSTON 10, MASS.

Oliver Adds Six Models, Gas or Diesel Tractors

Six models of industrial wheel tractors, available with either gas or diesel engines, now constitute the Oliver basic line.

The new tractors mount a wide range of equipment and have been designed to incorporate advanced features. Power steering is optional. Models now available are the 550, 770, 880, 990 GM Diesel, 950, and the 995 GM Lugmatic Diesel with automatic torque converter. The Oliver Corp., 400 W. Madison St., Chicago 6, Ill.

. . . New Products Briefs

• **Aluminum solder**—A thin white paste solder for sweated joints is marketed under the name "Amco #2316 Flux." The aluminum soldering flux works above 650F in torch applications and above 750F in furnace or oven soldering. American Solder and Flux Co., 19th and Willard Sts., Philadelphia 40, Pa.

• **Metal snooper**—Ferroflux is the name of a new low cost, lightweight, portable magnetic inspection device. The 23 lb unit will detect surface and subsurface defects in ferro-magnetic material. Its light weight allows the inspection device to go to the parts instead of the parts to the inspection device. Ferro Machine & Tool Co., 5514 W. Washington St., Indianapolis, Ind.

• **Concrete seal**—A new liquid treatment to prevent concrete floor dusting is offered under the tradename "Radon 401." One gallon of the material will cover 250 to 400 sq ft, depending on porosity and texture of the concrete surface. Maintenance, Inc., Wooster, Ohio.

• **Vibrating feeder**—Controlled feeding of a wide range of bulk materials at high rate is possible with a new machine that handles lumps as large as 36 in. in diameter. The unit is ideal for low headroom applications, according to the manufacturer, and has adjustable feed, vibration and hopper gate controls. Link Belt Co., Prudential Plaza, Chicago 1, Ill.

• **Form board**—New "Industrial Form Board" is designed for installation in exposed areas of plants and warehouses not requiring whiteness or light reflection. The Fiberglas boards serve as a permanent form for poured-in-place lightweight roof decks, as an acoustical interior ceiling and roof insulation. The

Bethlehem Rock Bolts are easy to install. Here slotted bolt, with wedge started in slot, is inserted in hole.

Rock bolts promote safety by stabilizing slopes

When bolt is driven with percussion tool, wedge is driven deep into slot, spreading bolt ends. Nut is then tightened with impact wrench.

Bethlehem Rock Bolts greatly reduce the chances of severe rock slides by locking together the stratified rock slabs, so that slopes are effectively stabilized.

TWO TYPES OF BOLTS The Bethlehem Slotted Rock Bolt, shown in the accompanying pictures, is inserted wedge-first in a drilled hole. The steel wedge, already started in the forged, centered slot, spreads the bolt ends when forced against back of hole. In addition to the 1-in. diam slotted bolt, Bethlehem also makes $\frac{5}{8}$-in. and $\frac{3}{4}$-in. diam Headed Rock Bolts, used with an expansion shell. Either bolt can be furnished in various lengths.

ROCK STRATA LOCKED TOGETHER Bethlehem Rock Bolts can be used with steel ties, anchor plate washers, or angle washers. Properly installed, the bolts provide a practical and economical means of locking stratified rock slabs together.

If you want to stabilize a troublesome rock formation, be sure to get in touch with us. All you need do is contact the nearest Bethlehem sales office.

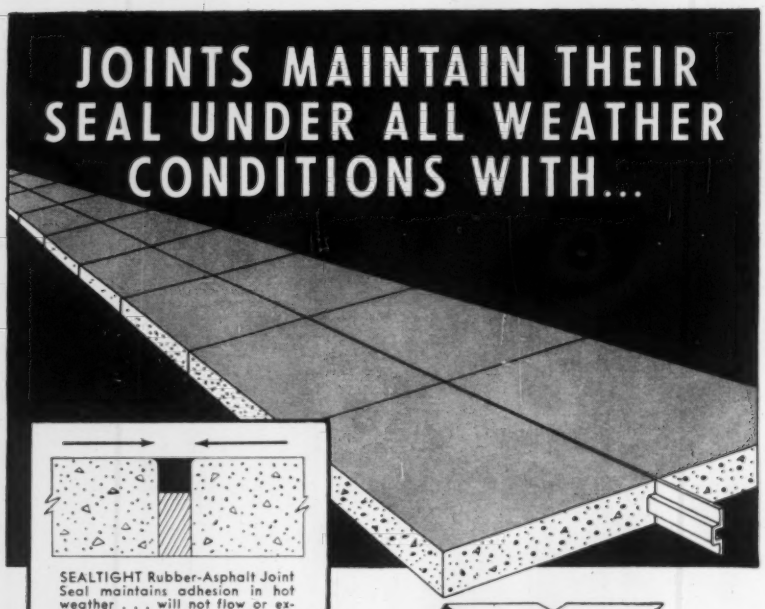
BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

JOINTS MAINTAIN THEIR SEAL UNDER ALL WEATHER CONDITIONS WITH...



SEALTIGHT Rubber-Asphalt Joint Seal maintains adhesion in hot weather . . . will not flow or extrude. Does not smear or track from tires.

Maintains adhesion in cold weather . . . will not crack or become brittle.

SEALTIGHT rubberized-asphalt compounds provide the ideal sealer for years of economical, trouble-free joints in concrete construction. They feature high resilient and adhesive properties and are able to maintain a bond at below zero temperatures. Will provide a positive seal in all types of monolithic construction. Designed for use with non-extruding type fibre expansion joints.

SEALTIGHT®

PRODUCTS

- EXPANSION JOINTS . . . Asphalt, Fibre, Cork and Sponge Rubber.
- TONGUE and GROOVE Center Strip.
- Hot and Cold Rubber Asphalt Joint Seal.
- Hot and Cold JFR Rubber Asphalt Joint Seal.
- Air Entraining Agents.
- Curing Compounds.
- Curb and Gutter Sections.
- "PREMOULDED MEMBRANE" Vapor Seal.
- "DURAJOINT" PVC Waterstops.
- "HYDROMAT" Asphalt Liners.

SEALTIGHT®

RUBBER-ASPHALT JOINT SEAL

RUBBER-ASPHALT JOINT SEAL compound available in both hot-pour and cold-applied types. SEALTIGHT Hot-Pour Rubber-Asphalt meets Federal Specifications SS-S-164 and CAA Specification P-605 . . . SEALTIGHT Cold-Applied Rubber-Asphalt meets Federal Specification SS-S-159 and CAA Specification P-615. Both are ideal for use in the joints of concrete streets, highways, bridges, etc.

JFR RUBBER-ASPHALT JOINT SEAL is recommended for sealing concrete runways where resistance to jet fuel is necessary. Available in Hot-Pour Type to meet Federal Specification SS-S-00167 and Cold-Applied Type that meets Federal Specification SS-S-00170. Easy and economical to apply.

TONGUE AND GROOVE Joint, used primarily as a longitudinal joint, provides a "keyed joint" that assures maximum efficiency in load transmission . . . helps to prevent blow-ups, spalling and controls cracking. Completely waterproof . . . produced from asphalt hardboard . . . is rigid, easy to handle and install, will not extrude. More economical and safer than steel center strips and will not rust away. Approved by Federal, State and Local engineering authorities.

EXPANSION JOINTS specifically designed to meet the needs of modern, properly-designed, properly-jointed construction projects. All types including Asphalt, Fibre, Sponge Rubber, Standard Cork, and Self-Expanding Cork joints available from "stock" at your local SEALTIGHT distributor. Meet Federal and State specifications.

Write today for complete information on the above products plus information about the many other top-quality SEALTIGHT products for highway construction . . . ask for the "PAVING PRODUCTS" Catalog.

W. R. MEADOWS, INC.

16 KIMBALL ST. • ELGIN, ILLINOIS

material is available in sizes 32 x 48 in. and 24 in. by purlin spacings up to 96 in. Thicknesses are one to two inches in ¼ in. increments. OWENS-CORNING FIBERGLAS CORP., TOLEDO 1, OHIO.

• **Concrete additive**—A new water-reducing agent for concrete (marketed as PDA Protex Dispersing Agent) reportedly gives maximum water reduction, higher strength and better cement dispersion in all types of mixes. The manufacturer claims that on a recent airfield paving job, ¼ lb of PDA per sack of cement allowed a reduction in cement from 7 to 6 sacks per cu yd of concrete. Unit water content was reduced 20%. The required flexural strength of 600 lb at 28 days was obtained after only 14 days. AUTOLENE LUBRIBANTS CO., DENVER, COLO.

• **Sheet metal elbows**—No transverse seams make a new type of circular duct elbow well suited for high pressure air conditioning and dust collection systems. The smooth elbows are stamped in two halves and both spot and arc welded together. They are available in sizes from 3 to 12 in. diameter and a variety of gages. CONSOLIDATED VENTILATING AND DUCT CO., INC., 19-10 HAZEN ST., JACKSON HEIGHTS 70, N. Y.

• **Door holder**—Smoother action and longer life are features of the No. 1750 door holder. According to the manufacturer, over a million holding cycles in laboratory tests disclosed no appreciable wear. The track of the holder is a bronze extrusion with forged flanges. The slide tension may be varied with an easily accessible adjusting screw located at the top of the slide. RUSSELL & IRWIN, NEW BRITAIN, CONN.

• **Kiln chain**—A new link shape for "Thermopruf" kiln chain has been introduced to cut operating and maintenance costs in wet process cement kilns, lime sludge kilns and wash mills. The new chain is said by the manufacturer to provide one-third more heat transfer area than conventional chain. ALLIS-CHALMERS MANUFACTURING CO., MILWAUKEE 1, WIS.

• **Corner guard**—A stainless steel corner guard now on the market eliminates weld marks or visible screw heads from the surface of the guard. It can be used with plastered walls, concrete block or tiled walls. Four anchors furnished with each guard are inserted and lowered into mortar joints by the bricklayer as he builds the walls. WILKINSON CHUTES, INC., 619 E. TALLMADGE AVE., AKRON 10, OHIO.

A STEEL PIPE FIRE SPRINKLER SYSTEM COULD HAVE PREVENTED THIS

Many of the disastrous fires which cause billions of dollars of annual loss and snuff out many hundreds of lives could be prevented if all buildings were equipped with *steel pipe* fire sprinkler systems.

The cost of a *steel pipe* sprinkler system when related to the potential loss factor is truly insignificant . . . and the savings in insurance premiums alone are considerable.

For fire sprinkler systems *steel pipe* is the accepted transmission medium to carry the flame-extinguishing water. This has always been the case, for *steel pipe* is the least expensive and most versatile of all metal tubular products.

That's why *steel pipe* is the most widely used pipe in the world, for fire sprinkler systems, radiant heating, snow melting, vent and drainage lines, electrical conduit, structural uses, gas, oil and steam lines.

Typical of modern *steel pipe* fire sprinkler systems is this one in the ceilings of the nation's largest single banking room in Houston, Texas.

STEEL PIPE IS FIRST CHOICE

- Low cost with durability
- Strength unexcelled for safety
- Formable—bends readily
- Weldable—easily, strongly
- Threads smoothly, cleanly
- Sound joints, welded or coupled
- Grades, finishes for all purposes
- Available everywhere from stock

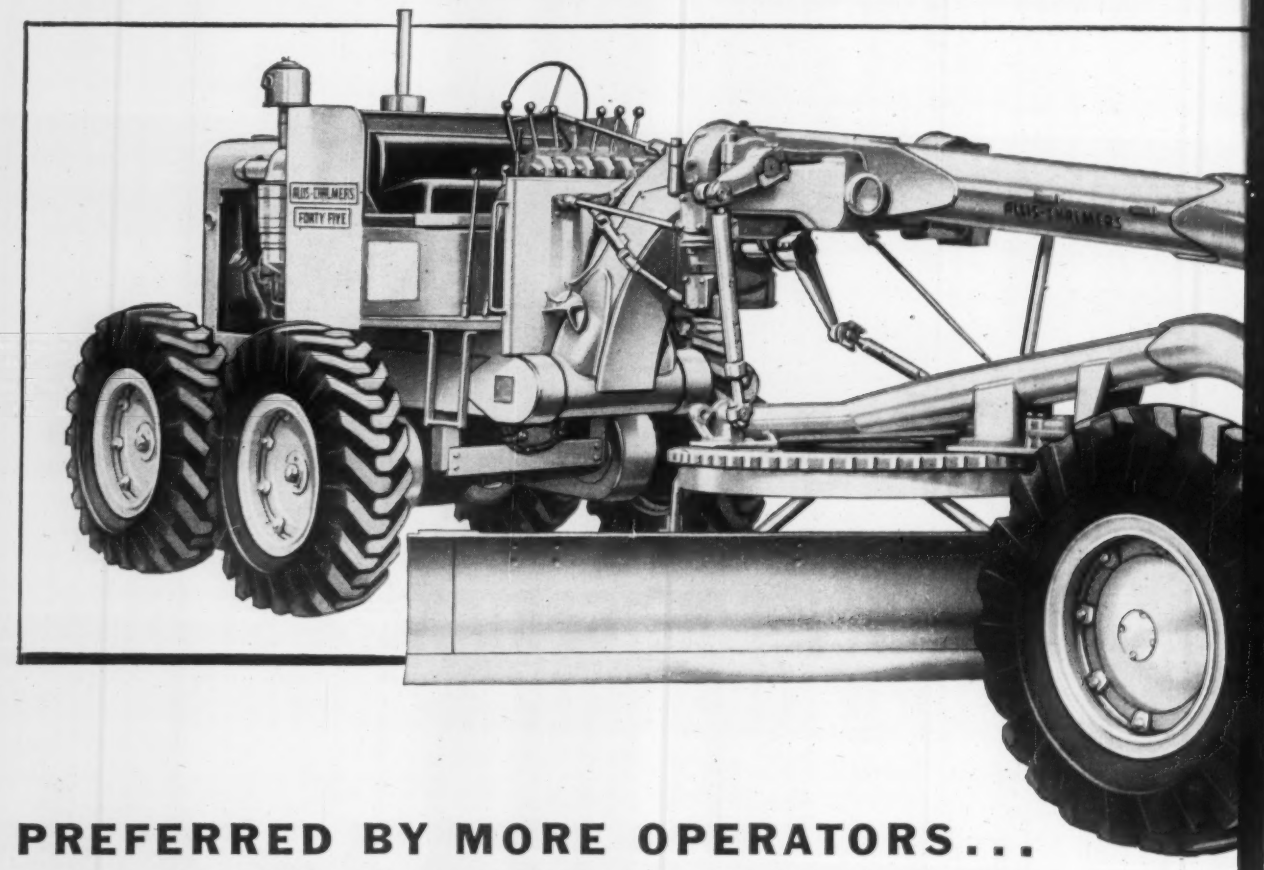
INSIST ON PIPE MADE IN U.S.A.

COMMITTEE ON STEEL PIPE RESEARCH

AMERICAN IRON AND STEEL INSTITUTE

150 East Forty-Second Street, New York 17, N.Y.

For consistently tough jobs, compare with any other heavy-duty motor grader



PREFERRED BY MORE OPERATORS... BOUGHT BY MORE USERS EVERY DAY

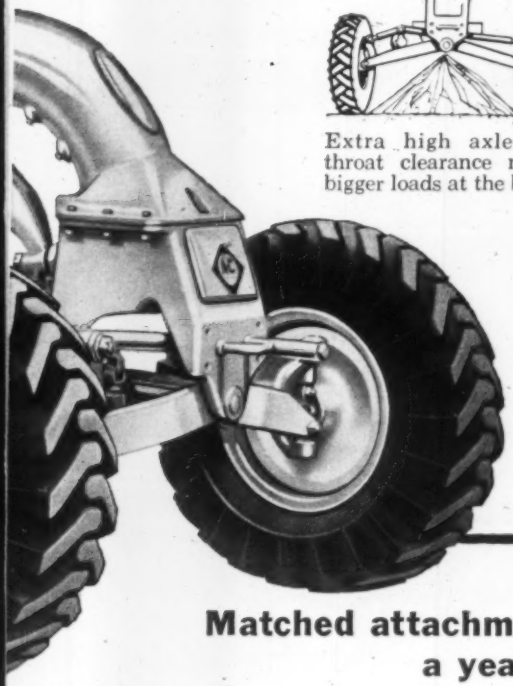
The FORTY FIVE has the power, weight, traction and speeds you need for high-production grading. Superior stability and precision control give you deep precision cuts or smooth finishes. The FORTY FIVE is built to take the shocks and strains of heavy-duty service — and to keep production steady. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

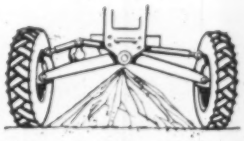
Look ahead... *move ahead* ...and stay ahead with **ALLIS-CHALMERS**

Allis-Chalmers FORTY FIVE performance

- 120 brake hp
- 6 forward speeds to 20.6 mph
- 3 reverse speeds to 7.0 mph
- 23,800 lb approx.

Advantages that mean more production . . . less maintenance . . . easier and better operation

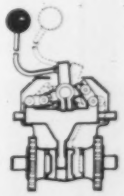




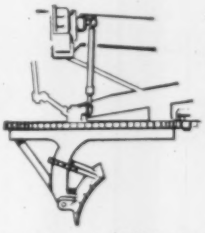
Extra high axle and throat clearance means bigger loads at the blade.

The ROLL-AWAY moldboard rolls dirt, gives more performance per horsepower, more production per gallon.

Fully enclosed power steering — easy control under all conditions.



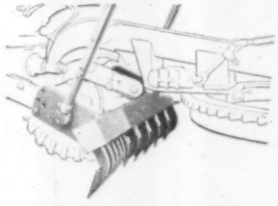
Toggle-type controls are exclusive with Allis-Chalmers.



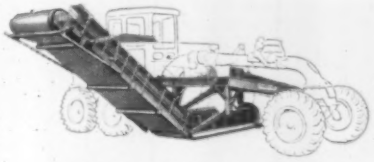
Front-mounted lift cases eliminate long shafts that twist under loads.

Matched attachments and accessories make it a year-round producer

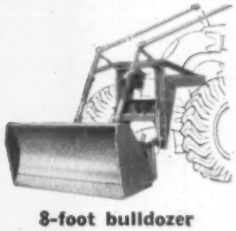
All-steel, stand-up cab



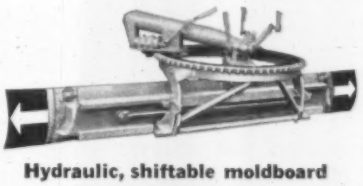
11-tooth, V-type scarifier



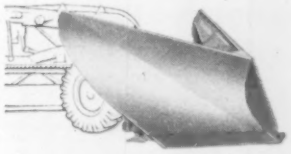
Hancock elevator



8-foot bulldozer



Hydraulic, shiftable moldboard

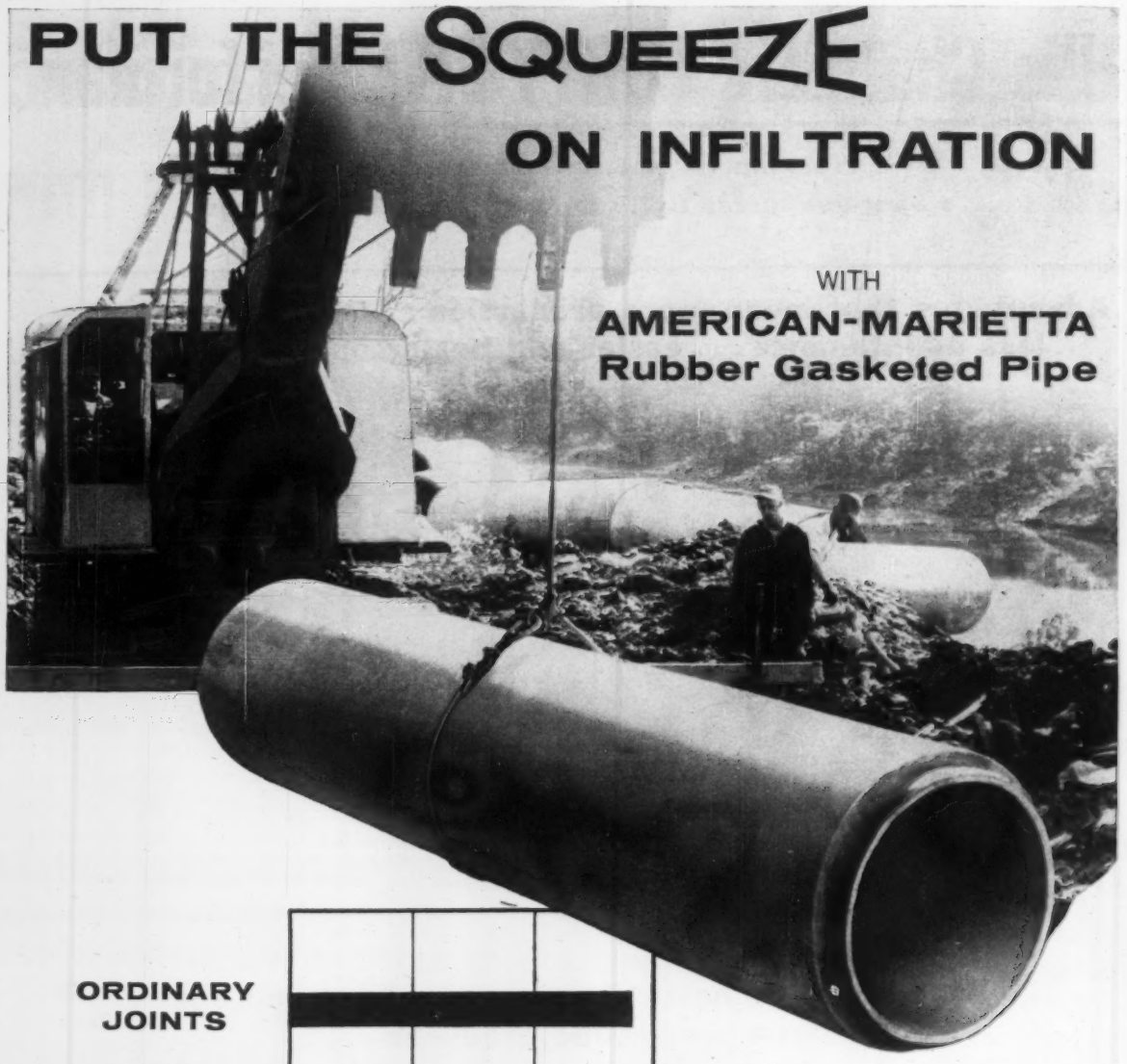


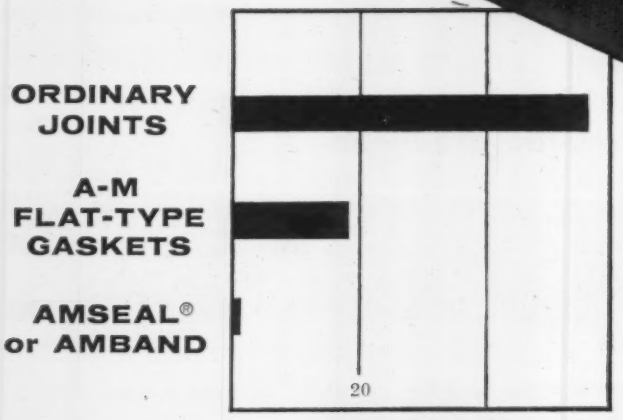
V-type snowplow

ROLL-AWAY is an Allis-Chalmers trademark.

PUT THE SQUEEZE ON INFILTRATION

WITH
AMERICAN-MARIETTA
Rubber Gasketed Pipe





American-Marietta flat-type gaskets and longer length pipe reduce leakage and provide savings through faster installation with fewer joints.

For positive control of infiltration specify AMSEAL (Rubber and Steel Joints) or AMBAND (Fiberglass-Resin-Collar Joints).

AMERICAN-MARIETTA COMPANY
CONCRETE PRODUCTS DIVISION
GENERAL OFFICES:
AMERICAN-MARIETTA BUILDING
101 EAST ONTARIO STREET, CHICAGO 11, ILLINOIS, PHONE: WHITEHALL 4-5600

Men and Jobs

Webb & Knapp Construction Gets New Vice President

Anthony M. Mazzucca has joined Webb & Knapp Construction Corp., New York City, as vice president. He will be in charge of construction in the New York metropolitan area, including Title I urban renewal projects.

Mr. Mazzucca formerly was associated with Arthur Venneri Co., New Jersey contractor, for more than 17 years as vice president and chief engineer. His experience includes construction of air-base hangars, high-rise apartment buildings, schools and hospitals.

Bernard Gillroy to Retire As Building Commissioner

Bernard J. Gillroy, 72, will retire as Commissioner of Buildings of New York City September 1. He has held the position since 1947, and has worked for the Building Department since 1938.

Closely associated with Mayor Robert Wagner when the mayor was head of the department, Mr. Gillroy remained as commissioner in recent years at the mayor's request. He has been engaged in engineering work in the city since 1911.

Careers

Education

Joseph G. Zeitlen, of Boston, associated with a number of water resources in Israel, has been appointed dean of the faculty of civil engineering at the Technion-Israel Institute of Technology in Haifa.

Russell B. Allen, former professor and acting head of the department of civil engineering, University of Maryland, has been named assistant dean of the College of Engineering at the university.

Arno T. Lenz has been chosen chairman of the University of Wisconsin's civil engineering department.

Public Works

Maj. Brian B. O'Neill has assumed the post of officer in charge of the Seattle branch office of the Alaska District, Corps of Engineers.

George P. Palo, formerly chief structural engineer with the Tennessee Valley Authoirty, has been appointed assistant chief engineer under Chief Engineer **George K. Leonard.**

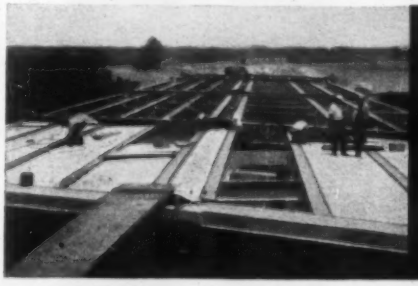
Emil V. Lindseth has been named assistant chief designing engineer of the Bureau of Reclamation at Denver. In

yes...
everyone
who is up on
time-saving, labor-saving methods
to avoid hazardous, expensive operations
uses

U.S.F.

"leave-in-place" STEEL FORMS
for concrete bridge decks . . .

we'll send you facts, details
and complete data on request
. . . just drop a card to-



USF

UNITED
STEEL
FABRICATORS, INC.
WOOSTER, OHIO

Highway Guard Rail • Bridge Flooring
Steel Forms for Concrete Bridge Decks
Corrugated Metal Pipe • Window Wells
Metal Doors & Frames • Metal Buildings

Jungle Busters

by R. G. LeTOURNEAU

The pioneering spirit is still strong in America—or if it isn't it should be, because there's still lots to be gained from opportunities all around us today.

For instance, even today there are millions and millions of acres of wooded wilderness—land which has been almost too tough to clear, which still defies civilization. A great deal of this land is rich in natural treasures and rich in promise. But there it lies, unused.

In these jungle areas you will find fertile soil for farming, rich deposits of minerals, good land for grazing, fine forests for timber and plenty of space for new industries—all blocked by impassable vegetation.

So there's one thing that a man *must* have to conquer this wilderness, and that's ACCESS. And the only way he will get the access he needs is by machines made specifically for the job. In other words, machines that are as BIG as the jobs they are going to have to do.

This problem became a reality for us when we were called on to provide machinery to clear thousands of acres of jungle land in a hurry in Peru and Liberia, for roadbuilding and agricultural projects. Of course, in order to clear off big chunks as fast and as cheaply as possible, we had to design and build some revolutionary new machines. What we developed is a "team" we call *Jungle Busters.*

Take the Tree Crusher for example. It's a real monster of a machine weighing 140 tons that pushes over everything in its path, including trees 3 and 4 feet in diameter. It rolls right over the trunk, splits it open, breaks off the branches, and leaves everything matted on the ground for easy burning. It travels plenty fast for the job, cutting big swaths through the jungle 20 feet wide.

And for the really big boys—trees six or eight feet in diameter, we've got the Tree Stinger that can walk right up to one of them, give it a 250,000-pound shove—and over it goes, roots and all. We've *yet* to find a tree the Stinger can't push over.

Then, too, we've developed a big 50-ton Disc Plow to come in and finish up the job. It has discs 6 feet tall and it plows a path 16 feet wide. This one's made to break new land, stumps and all, and on a really tough job it will plow from two to three acres in an hour.

So you can see that this Jungle Buster team can clear land at a rate never before dreamed of. And land clearing is only one of the fields we're interested in. We also are making specialized equipment for some other tough jobs—like off-shore drilling, heavy logging, off-road hauling, heavy materials-handling, and a few others. But we'll be talking about those later. In the meantime if you'd like to talk to us about problems that need a BIG answer, we would like to hear from you.

R. G. LeTourneau

R-101

R. G. LeTOURNEAU INC

27210 SOUTH MAC ARTHUR • LONGVIEW, TEXAS

. . . Men and Jobs

his new position he will assist **Louis G. Puls** in directing the Bureau's project designs in the 17 western states and Alaska.

Hathaway J. Hanes now heads Michigan's Conservation Department, engineering and architecture section. He succeeds **L. N. Jones,** who was promoted recently to deputy director in charge of field operations for the department. Mr. Hanes formerly worked for the Michigan State Highway Department.

The New York City Housing Authority has retained two consultants to advise it on design of its developments. **George L. Brown, Jr.,** and **Bernard W. Guenther,** of the architectural firm of Brown & Guenther, New York City, have been retained under a one year contract.

Business

Marshall Jones, formerly Butte County, California, director of public works, has gone with Tippetts-Abbett-McCarthy & Stratton, New York City, in connection with the Seyhan Irrigation Project in Turkey, headquartered in Adana.

Wayne F. Koppes, architect and specialist on curtain wall design, has joined Washington Steel Corp., Washington, Pa., as a consultant. He will be available to stainless steel fabricators, architects and designers who are planning to use stainless steel for architectural purposes.

John W. Maloney and **Richard C. McGowan** have been admitted as partners in the firm of Dames & Moore, soil mechanics engineers, Los Angeles. Mr. Maloney is assigned to the New York City office and Mr. McGowan is in the general offices of the firm.

John A. Wahl, architect, has joined Joseph & Vladeck, architects, New York City, as production manager.

Edward J. Tangredi has been named director of monumental and general construction sales for Reynolds Metals Co., Richmond. He will direct development of aluminum curtain wall systems for commercial and industrial buildings and apartment houses. He formerly was chief engineer for Webb & Knapp, building and developmental firm, New York City.

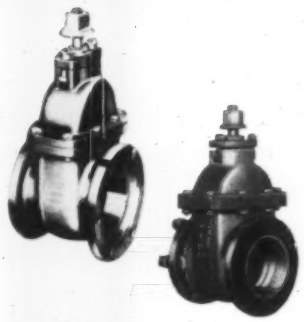
Koch & Fowler, Dallas consulting engineering firm, has been reorganized as Koch & Fowler and Grafe, Inc. **Adam K. Grafe** is the new president of the company. **James D. Fowler** and **Earle W. Sudderth** are vice presidents.

Frank J. Schwemler, who retired as Cleveland's water commissioner, has been named northern Ohio representative of Price Bros. Co., Dayton, maker of concrete pressure and sewer pipe.

ADVANTAGES TO THE ENGINEER and CONTRACTOR

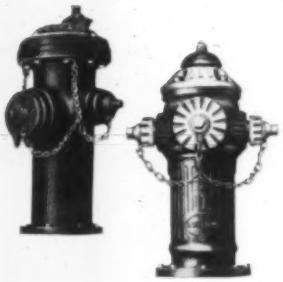
In the course of nearly 100 years of successful production, Ludlow and Rensselaer valves and fire hydrants have earned a reputation for excellence throughout the waterworks industry.

Not only do they exceed A.W.W.A. requirements for materials and workmanship, but they offer recognized *advantages* to the exacting engineer and waterworks superintendent . . .



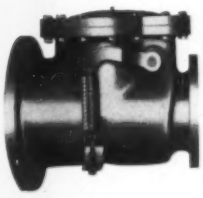
GATE VALVES

. . . time-tested, trouble-free gate and wedge mechanism. Complete shut-off. Quality and ruggedness.



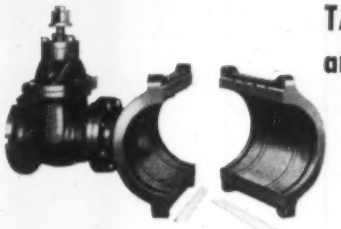
HYDRANTS

. . . non-freezing; non-flooding. Breakable ground line flange. Fatigue-resistant bronze stem. Quick water. Easy inspection and repair.



CHECK VALVES

. . . non-slamming under most severe conditions by virtue of adjustable spring tension. Full clearway. Single disc. Sizes to 30".



TAPPING SLEEVES and VALVES

. . . safe, quick installation; trouble-free service. Range of sizes to 48".

LUDLOW & RENSSELAER WATERWORKS PRODUCTS for MUNICIPAL SERVICES

- Fire Hydrants for 150-lb. water working pressure
- Fire Hydrants for 250-lb. water working pressure
- Hose Valves
- Air Valves
- Factory Mutual Approved Indicator Posts
- Factory Mutual Approved Gate Valves
- Factory Mutual Approved Check Valves
- Double Disc Parallel Seat A.W.W.A. Gate Valves
- Double Disc Parallel Seat Single and Double Square Bottom Gate Valves
- Horizontal Check Valves
- Multi-Port Check Valves
- Vertical Check Valves
- Foot Valves
- Tapping Sleeves & Valves
- Floor Stands
- Sluice Gates
- Mud Valves
- Shear Gates
- Flap Valves
- Valve Boxes

Other waterworks Gate Valves for working pressures to 500 lbs. and over.

Write today for full information on any of these products, each the standard of quality in its field.

LUDLOW & RENSSELAER

VALVES AND HYDRANTS

THE LUDLOW VALVE MANUFACTURING CO., INC., TROY, N. Y.—SINCE 1861

Conditions wet. Schedule met. More proof that

GULF MAKES THINGS

Plowing through the muddy roadbed of U.S. Route 301, Dickerson, Inc. of Monroe, N.C., turned up a lot of evidence that Gulf makes things run better.

Even under normal conditions the clearing, grading and installation of grade separations on this job would have been tough enough.

But under the unusually wet conditions they met, their earth handling equipment took extra punishment from the word go. They moved over 1,250,000 cubic yards of unclassified material. They sank more than 16,000 feet of underground drainage pipe, in addition to conventional culverts. They finished on time.

Throughout the project, Gulf made things run better in more ways than one. Mr. W. L. Howerton, general superintendent of grading, reports: "We had to keep our machines in first class shape—to get the peak performance needed under these severe conditions. That's one reason we selected Gulf fuels and lubricants. Half my worries were eliminated, knowing we had a dependable source of supply, with quick and sure service."

A winning team. Left to right: W. L. Howerton, general superintendent of grading for Dickerson, Inc.; W. C. Ritchie, Gulf Sales Representative; N. K. Dickerson, president of Dickerson, Inc.; D. E. Smith, foreman, bridge department, Dickerson; R. W. Parks, Jr., general superintendent, bridge department.

Dickerson equipment runs better on Gulf fuels and lubricants. Included on this job were: 3 sheep-foot rollers, 4 motor graders, 10 pans, 3 draglines, 2 push tractors, 4 dozers, 2 truck cranes.

RUN BETTER!

GULF

Gulf can make things run better on your jobs, too—with 1,500 strategically located warehouses ready to serve, and a Gulf Sales Engineer always standing by—backed by 1300 scientists and technicians.

Do you have these useful Gulf booklets?

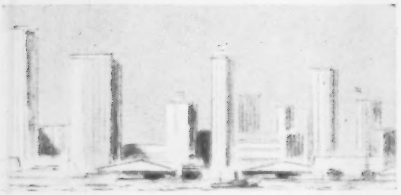
Write for "Gulf and Your Business" . . . and for the revised edition of "Contractors' Guide"—a lubrication and maintenance manual your men will appreciate. Meanwhile, get in touch with your nearest Gulf office.

GULF OIL CORPORATION
Dept. DM, Gulf Bldg., Pittsburgh 30, Pa.

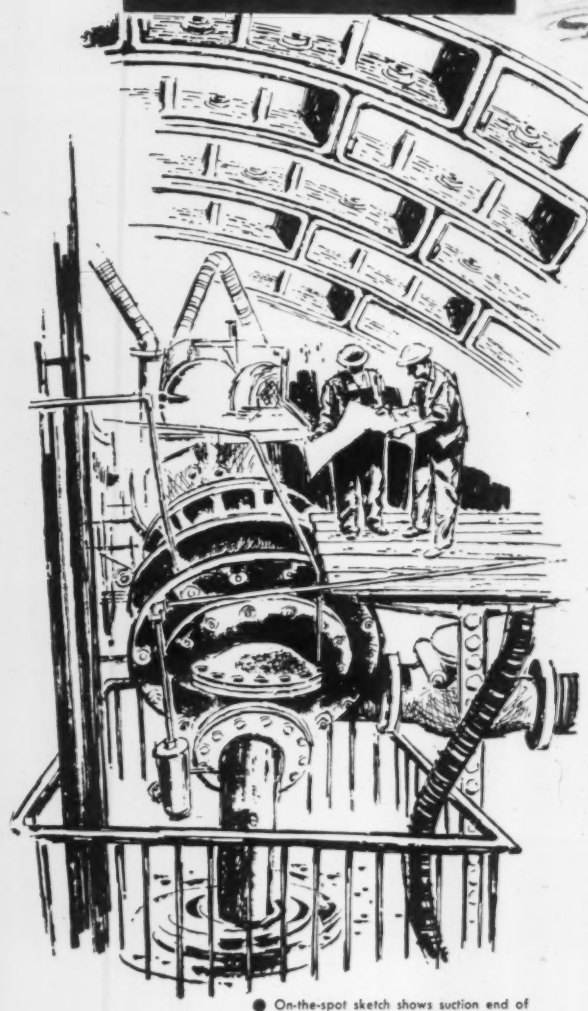
☐ Please send me the free "Contractors' Guide."
☐ Send free booklet "Gulf and Your Business."

Name _____
Title _____
Company _____
Street _____
City _____ Zone ____ State _____

SP-9311



For experience in centrifugal pump applications:



● On-the-spot sketch shows suction end of dredge pump, protected by grizzly (debris rack), removing silt from third tube of Lincoln Tunnel. Illustrated reprints of article covering this operation are available on request.

MORRIS
Field Engineering

You use all possible precision in determining your pumping needs. Having done so, you expect an expert, candid appraisal of those needs – and the means of fulfilling them – from a pump manufacturer. Morris provides this . . . and more.

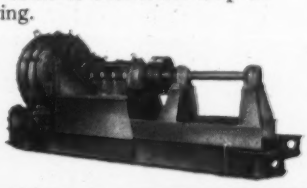
CASE HISTORY: Removal of 8 to 14 feet of silt from the bottom of mile-long Hudson River tunnels has traditionally been done by laborious hand-loading of trucks on temporary rails. A Morris engineer, together with the contractor for the third Lincoln Tunnel, worked out a method of converting silt to slurry with high-pressure fire hoses, and removing with two Morris Dredge Pumps.* Removal time was cut from *20 weeks to 20 days!*

This is only one instance where Morris application know-how has saved customers many thousands of dollars.

In back of that know-how is the Morris know-*why* of modern hydraulic design . . . and nearly a century-long practice of building superb performance and durability into each and every Morris Pump.

Add to this the most complete slurry laboratory maintained by a pump manufacturer for the *anticipation* of critical velocities, pressures, etc., involved in your pumping problem . . . and you may wish to join the pump users all over the continent who come to Morris for help in pump applications engineering.

*Two Morris 10 GA 28½" Pumps (right) were used . . . one as a dredge . . . the other as a booster.



MORRIS
CENTRIFUGAL
PUMPS

MORRIS MACHINE WORKS
BALDWINSVILLE, N. Y.

Sales Offices in Principal Cities • Export Office: 50 Church St., New York 7, N.Y.

Obituaries

Mansell C. Hynds, 45, a civil engineer for the City of Dallas. Before moving to Dallas he was employed by the Southwestern Aerial Surveys of Austin and by the State Highway Department of Texas.

Glen H. Austin, 62, of Syracuse, N. Y., civil engineer who retired recently after 37 years with the New York State Department of Public Works. He was a 1921 graduate of Syracuse University.

Edgar E. Bilodeau, 61, construction superintendent, in San Luis Obispo, Calif. He headed up many road and airfield projects and worked on several large dams in the West.

James D. K. Lyman, 78, retired engineer and director of Mt. Vernon Bridge Co., Mt. Vernon, Ohio. He had been with the company for 45 years. He retired in 1956.

J. Lodge Nicholson, 69, Philadelphia construction engineer and architect. He was associated with American Viscose Corp. until his retirement several years ago.

William M. Lanard, 70, retired Philadelphia transit engineer. Mr. Lanard retired in 1948 after 35 years service in the water bureau and transit department. He helped design the Market St. tunnel under the Schuylkill River and the Frankford and Broad St. subways.

George F. Hobson, 43, of Gloucester, N. J., in New Bedford, Mass. A civil engineer, he was associated with Blauvelt Engineering Co., Woodbury, N. J.

Harold G. Eckhardt, 56, chief traffic engineer for the Ohio Highway Department. Before 1940, he was with the Akron city planning department for five years.

Carroll H. Pratt, 84, architect and a former president of the American Instiute of Architects. He was associated with the architectural firms of Cross & Cross and York & Sawyer, both in New York City, and served for 10 years as consulting architect to the Treasury Department. Mr. Pratt specialized in the design of banks, hospitals and post offices.

William H. Callahan, Jr., 67, Baltimore contractor, and secretary and treasurer of Potts and Callahan Contracting Co. and Potts and Callahan Paving Co.

(*Obituaries continued page* 134)

U.F.C.
makes tough jobs look easy!

MAINTAINING REGULAR COMMUTER TRAFFIC OF FLUSHING BRANCH IRT ELEVATED RAILWAY at Flushing River Bridge by temporary underpinning and shoring on 140 ft. piles, to permit removal of old foundations which failed, and rebuilding new foundations.

Work performed by Underpinning & Foundation Co., Inc. as sub-contractors to Woodcrest Construction Co. & Wheeler Engineering Co., General Contractors under supervision of Department of Public Works, N. Y. C.

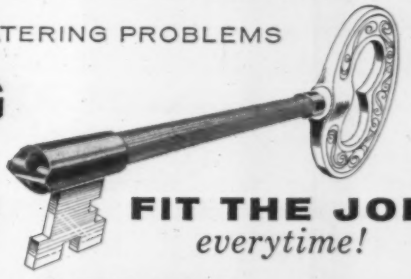
Service Experience

✓PILING ✓FOUNDATIONS ✓SHORING
✓UNDERPINNING ✓CONSULTATION & DESIGN

UNDERPINNING & FOUNDATION CO., INC.
155 E. 44 St., New York 17, N. Y.
General Contractors For More Than 50 Years — Inquiries are invited — no obligation

THE *key* TO UNWATERING PROBLEMS

STANG WELLPOINT SYSTEMS FIT THE JOB *everytime!*



Putting water in its place

STANG ...anyplace!

JOHN W. STANG CORPORATION
Engineers and Manufacturers of Unwatering Equipment
BELL, CALIFORNIA 8221 Atlantic Avenue LUdlow 2-7421
OMAHA, NEBRASKA 2123 South 56th Street WAlnut 7796
TACOMA, WASHINGTON 2339 Lincoln Aveue Fulton 3-3438
TULSA, OKLAHOMA, 4026 So. Urbana St., Riverside 2-6929

SIMPLEX Center Hole Hydraulic PULLERS
Perfected for
PRESTRESSING CONCRETE

Self contained and Remote controlled pumps and rams in capacities 10-100 tons.

SIMPLEX JACKS

TEMPLETON, KENLY & CO. Broadview Illinois
2553 GARDNER ROAD, .. BROADVIEW, ILL.

CROSSING SLABS

Steel reenforced, edge armored PRECAST CONCRETE. Dimensions: 16½" wide x 6'0" long.

Ideal for industrial plant crossings. Provides strength, durability, smooth riding qualities with minimum maintenance.

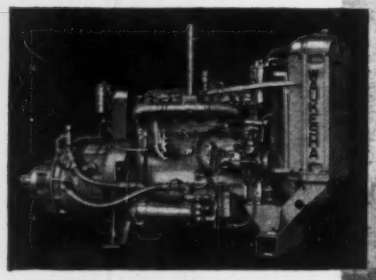
WRITE FOR Bulletin 858

PERMACRETE PRODUCTS CORPORATION
1839 South Wall St., Columbus 7, Ohio

Profit-Paying WAUKESHA POWER

FOR CRANES AND SHOVELS

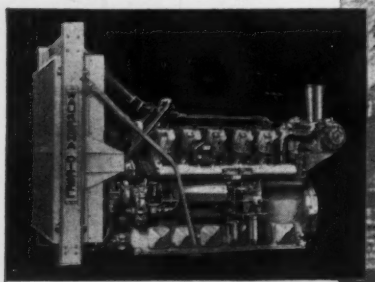
HANSON QUALITY HCDM
CLARK EQUIPMENT
"QUICK-WAY"
THEO. Lorain
UNIT
Manitowoc
MICHIGAN
GarWood
LINK-BELT SPEEDER
KOEHRING HEAVY DUTY
INSLEY
ORTON Torque-Control
BAY CITY
AMERICAN HOIST
LIMA
MARION



WAUKESHA 135 DIESEL
Torque Converter Package—
4¼ x 5-in., 426 cu. in.

●

WAUKESHA VLRDBSU
V-12 Turbo-Supercharged DIESEL
8½ x 8½-in., 5788 cu. in.



Complete size range to 1235 hp . . . all standard fuels.

387

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN

NEW YORK TULSA LOS ANGELES

. . . Obituaries

Edward A. Courter, 52, vice president of Turner Construction Co., New York City. At the time of his death, he was project executive for construction of the new First National Bank building in Miami, Fla., and the new Western Electric Co. plant in Columbus, Ohio.

John Bentley, 79, a director of Thomas H. Bentley & Son, Inc., Milwaukee construction firm.

Emanuel Katzman, 61, president of Emanuel Katzman & Co., Youngstown, Ohio, general contractor. His firm built many churches and schools in the area.

Harold R. Carle, 60, Youngstown, Ohio, consulting engineer and a partner in Clancy-Carle, consulting engineers, until his retirement in 1955.

Orland W. Irwin, 76, Evanston, Ill., civil engineer and former vice president of Truscon Steel Division, Republic Steel Corp. At the time of his death, he was president of the Rail Steel Bar Association, Chicago. He supervised construction of numerous arch bridges and helped organize the Concrete Reinforcing Steel Institute and the Steel Joist Institute.

Raymond R. Bowser, 57, president of Bowser-Morner Testing Laboratories, Inc., Dayton, Ohio.

George F. Blamey, 55, associated with Bellman, Gillett & Richards, Toledo architects.

John D. Brown, 90, Salisbury, N. C., contractor.

Tom Bowlin, 52, vice president and sales manager of the Mosher Steel Co., Houston.

Harry J. Eggly, Jr., 63, founder of the Philadelphia Engineering firm of Eggly-Furlow.

Frank M. Weaver, 79, retired civil engineer. He founded the Frank M. Weaver Structural Steel Co., Lansdale, Pa.

Carroll E. Brown, 35, engineer at the Naval ordnance plant in Louisville.

Robert W. McDonald, 61, retired civil engineer, formerly with the Corps of Engineers.

James H. Samford, vice president, A. C. Samford, Inc., construtcion firm of Albany, Ga.

Charles P. Allen, 55, president of Central Tractors, Inc., Concordville, Pa., and well known in the heavy equipment contracting field.

DEPENDABLE
NAYLOR PIPE
DEPENDABLE
NAYLOR PIPE
DEPENDABLE
NAYLOR PIPE
DEPENDABLE
NAYLOR PIPE
DEPENDABLE

For water, air, ventilating, dredging, drainage—it will pay you to look into the performance advantages of dependable NAYLOR Spiralweld pipe. Its ease of handling and installation. Its built-in extra strength and safety. The speed and economy of connection with the one-piece NAYLOR Wedgelock coupling. Sizes from 4″ to 30″ in diameter—14 to 8 gauge in wall thickness.

Write for Bulletin No. 507

NAYLOR PIPE *Company*

1248 East 92nd Street, Chicago 19, Illinois

Eastern U. S. and Foreign Sales Office: 60 East 42nd Street, New York 17, N. Y.)

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, Reports
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

† **Mass., Falmouth** — TRANSMITTER FACILITY — BA 9/23—U. S. Eng., 150 Causeway St., Boston, ground to air transmitter facility—Otis Air Force Base, ENG-19-016-59-23. $100,000-$150,000. Plans deposit $10. Anderson-Nichols & Co., 150 Causeway St., Boston, Mass. and Samuel Glaser Assoc., 234 Clarendon St., Boston, archts. CD 8/27.

Mass., Easthampton—BA 10/1—Town, Dpt. P. Wks., Town Hall, sewage treatment plant, etc. $515,000. Plans deposit $30. Tighe & Bond, Inc., Bowers and Pequot Sts., Holyoke, Mass., engr. CD 10/11/56.

† **Vermont**—BA On Or About 10/15—U. S. Eng., 310 State St., Springfield, Mass. Constr. Rte. 106 relocation and Hartness Airport Access Rd., Springfield and Weathersfield, ENG-19-016-59-5. $200,000-$300,000.

BUILDINGS—BA

Mass., Weymouth—SCHOOL—BA 9/24—Sacred Heart R. C. Church, c/o Chancery Office, 1 Lake St., Brighton school addn. $350,000. Whelan & Westman, 262 Washington St., Boston, archts. CD 8/1.

Conn., Montville—SCHOOL—BA 9/24—Town, Bd. Educ., Uncasville School, Uncasville, masonry brick, concrete and aluminum Mohegan Elementary School, Golden Rd. $500,000. Plans deposit $25. John E. McGuire, 157 Washington St., Norwich, archt. CD 2/27.

Mass., Natick — HOUSING — BA 9/25 — Town Housing Auth., Natick, State Aided Housing Project No. 667-1. $380,000. Plans deposit $50. Tekton Assocs., 200 W. Central St., archts.

Mass., Marblehead—HOUSING—BA 9/30—Town Housing Auth., 156 Elm St., housing for the elderly (40 units), $350,000. John J. Mahoney & Assoc., 61 Jefferson Ave., Salem, archts. CD 6/13.

BUILDINGS—SLC

Mass., Somerville—WAREHOUSE—Publix Food Markets, Inc., 840 Lexington St., Waltham, soon lets contract warehouse, 244 Pearl St. $120,000. Herman L. Feer & William E. Nast, 27 School St., Boston, archts.

HEAVY CONSTRUCTION—LB & CA

MAINE—State Hy. Comn., Augusta,
H. E. Sargent, Inc., Stillwater, Me., CA $500,673, b. conc. 4.168 mi. FAP No. S-0210 (7), Hampden. Bids July 2. CD 7/11.

NEW HAMPSHIRE—Dpt. P. Wks. & Hys., Concord,
Landers & Griffin Inc., 800 Islington St., Portsmouth, N. H., CA $563,442. surf. treated crushed gravel roadway and 3 span, 195 ft. rein.-con. bridge 2.841 mi. N.H. 101 Peterboro in Cheshire Co. Bids June 26. CD 7/3, under LB.

North Atlantic Dredging Co., 62 Condor St., East Boston, Mass., LB $45,900, est. $60,000, dredging mooring basin-Green Harbor River, Marshfield, MASSACHUSETTS. Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Mass. Bids Aug. 26. CD 8/15.

▲ **CONNECTICUT**—State Hy. Dpt., State Office Bldg., Rm. 527, Hartford,
D. Arrigoni, 605 Main St., Middletown, Conn., CA $1,460,757 (7 bidders) 7,948 lin. ft. concrete pavement Waterbury expressway from Hamilton Schott Rd. incl. 4 bridges, 1 pedestrian bridge, 1 pedestrian underpass and 2 rein.-con. box culverts, Proj. 182-20 Waterbury. CD 7/9, under LB.

▲ **Campanella & Cerdi,** 780 Jefferson Blvd., Hills Grove, R. I., and **DeFonce Constr. Co., Inc.,** 110 Colonial Ave., Bridgeport, Conn., CA $1,427,630, Contr. 58-4, Gulf Pond Sewage Treatment Plant and Lift Station, MILFORD, CONN. Town of Milford, Milford, Conn. Bids Aug. 21, awarded Sept. 4, CD 8/27, under LB.

BUILDINGS—LB & CA

Porter Hospital, South St., Middlebury, Vt., rejected bids Aug. 19, HOSPITAL addns., alterations, MIDDLEBURY, VT. $400,000. CD 7/30.

Joseph R. Spades, 586 Manley Rd., West Bridgewater, Mass., Separate Contracts, $500,000, "West Side SHOPPING CENTER," Belmont St., BROCKTON, MASS. Edgar H. Wood & Assoc., 1050 Hancock St., Quincy, Mass., archts.

Fritz Constr. Co., 2181 Washington St., Roxbury, Mass., CA Approx. $250,000 WAREHOUSE, Congress and William Sts., CHELSEA, MASS. American Biltrite Rubber Co., 22 Willow St., Chelsea, Mass. Bids Aug. 22. CD 8/20.

Town of Pepperell, School Bldg. Comn., Town Hall, Pepperell, Mass., rejected bids May 9, JUNIOR HIGH SCHOOL, Main St., PEPPERELL, MASS. LB $414,865. CD 5/16, under LB. May re-advertise.

▲ **John Zandonella, Inc.,** 70 Chase St., Bridgeport, Conn., LB $1,114,400 (4 bidders) 66,000 sq. ft. North End Elementary SCHOOL, Reservoir Ave., BRIDGEPORT, CONN. Town of Bridgeport, Bd. Educ., 804 Main St., Bridgeport, Conn. Bids Sept. 3. CD 8/13.

Jack R. Hunter, Inc., 153 Main St., Manchester, Conn., CA $350,000, 15,376 sq. ft. 3-level CLUBHOUSE, swimming pool, Abbott Rd., ELLINGTON, CONN. Ellington Ridge Country Club, 125 Adelaide Rd., Manchester, Conn. Marchant & Minges, 1007 Farmington Ave., West Hartford, Conn., engrs. Awarded Sept. 2. CD 8/15.

Melville Land Development Co., Still Hill Rd., Hamden, Conn., Owner Builds. $450,000, 45 HOUSES, "Still Woods" Still Hill Rd., HAMDEN, CONN. CD 10/17/56.

Dwight Bldg. Co. Sanford St., Hamden, Conn., CA $100,000 2 story, 10,000 sq. ft. brick, FACTORY addn., NEW HAVEN, CONN. Comn. Hard Rubber Co., 407 East St., New Haven, Conn. Caproni Assocs., 132 Temple St., New Haven, Conn., archts.-engrs. Awarded Aug. 4.

Frank Mercede & Sons, 72 Little Hill Dr., Stamford, Conn., CA $360,000 SUPERMARKET, High Ridge Rd., STAMFORD, CONN. Gibor & Smith, 55 Bank St., Stamford, Conn. B. L. Whinston, Bedford St., Stamford, Conn., archt. First National Stores, lessee. Awarded Sept. 4.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

Pa., Phila. — BATHING LAKE — BA 9/22 — Fairmount Park Comn., Belmont Office, West Park, Phila., Zone 31, alterations, imprvs. Franklin D. Roosevelt Bathing Lake, Bids 5993, Part I, structural work; Bid 5994, Part II, mech. work; Bids 5995, Part III, elec. work; Bid 5996, Part IV, pool and yard piping. CD 2/3/47.

† **New Jersey**—BA 9/23—U. S. Eng., 111 E. 16 St., New York 3, N. Y., dredging to depth of 25 ft. at mean low water involving removal approx. 102,350 cu. yd., place measurement, all material except ledge rock from South Channel, Raritan River, CIVENG-30-075-59-16.

N. Y., Brooklyn—BA 9/26—Dpt. P. Wks., Rm. 1800L, Municipal Bldg., New York, Zone 7, Contr. No. 18, external sludge heaters, Owls Head Pollution Control Proj., Brooklyn Boro. Plans deposit $2.50.

N. Y., New York—PASSENGER ELEVATOR—BA 9/26—New York City Transit Auth., 370 Jay St., Brooklyn, Zone 1, furnishing, installing passenger escalator, 205th Street Station, Concourse Line, IND Div., Contr. E-189, Bronx Boro. CD 8/31/45.

BUILDINGS—BA

Md., Rockville—SCHOOL—BA 9/23—Montgomery Co. Bd. Educ., Rockville, Jackson Rd. Elementary School, Springbrook area, Silver Spring. Plans deposit $35. Arthur L. Anderson, 1726 M St. N.W., Wash., D. C., archt. CD 4/24.

† **Pa., Farrell**—TRAINING CENTER—BA 9/23—U. S. Eng., New Post Office Bldg., Pittsburgh, Army Reserve Training Center, New Castle Rd. $227,000.

▲ **N. Y., New York** — SCHOOL — BA 9/30 — Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, general constr., plumbing and drainage, heating and ventilating, electrical work and lighting fixtures P.S. 180, Manhattan Ave. and West 119th St., Manhattan Boro. $2,295,100. Plans deposit $25 for general, $8 each for trades. CD 5/30.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—Dpt. P. Wks., State Office Bldg., Albany,
N. Y.—**Dalrymple Gravel & Cont. Co., Inc.,** 105 E. Chemung Pl., Elmira, N. Y., CA $1,705,152, est $2,107,000, b. conc. 7.24 mi., Waverly-Lockwood, S.H. 1078, Lockwood-Van Etten Pts. 1 & 2, S.H. 8224. Rte. 34, Contr. FARC 58-91, Proj. DF-995 (3) DF 102(3), Chemung and Tioga Counties;
N. Y.—**Peckham Road Corp.,** 50 Harlem Ave., White Plains, N. Y., CA $558,522, est. $685,000, b. conc. 4.34 mi. Hollowville-Crarryville, S.H. 763, Crarryville-State Line, S.H. 762 Rte. 23, Contr. 58-81 Proj. No. DF-564(7), Columbia Co.;
N. Y.—**John M. Robertson, Inc.,** 59-61 Ceperley Ave., Oneonta, N. Y., CA $617,361, est. $780,000, b. conc. and misc. work 4.62 mi. Cape Vincent-Watertown Pt. 2, S.H. 1164 Rte. 12 E. Contr. 58-71 Proj. DF-565 (4), Jefferson Co.;
N. Y.—**S. J. Groves & Sons Co.,** Court St. Rd., Syracuse 6, N. Y., CA $4,821,064, est. $6,262,000, Interstate Rte. 505 (Central Square-Parish) Central Square-Constantia, S.H. 1243 C.R. No. 12, 32 and 38, 9.01 mi. 4.01 acc. mi., Oswego Co.;
N. Y.—**Brunner Asphalt & Constr., Inc.,** 237 Kensington Ave., Buffalo 14, N. Y., CA $709,900, est. $857,000, b. conc. 4.12 mi. Southwestern Blvd. State Hy. 9269. Contr. FARC 58-73, Proj. No. DF-1079 (6), Erie Co.;
N. Y.—**Cold Spring Constr. Co.,** Akron, N. Y., CA $1,094,317, est. $1,375,000, 8.79 mi. Rte. 226, Savona-Bradford, S. SH. 1102, Bradford-Tyrone, S.H. 1420, Schuyler and Steuben Counties;
N. Y.—**D. A. Collins Constr., Inc.,** Box 191, Mechanicville, N. C., CA $545,574, est. $629,000, 0.72 mi. Rte 11 & 87, hy. railroad separation comp. I-beam 251 0.17 mi. elimination of grade crossing of New York Central R.R. with Richville-DeKalb Jct. Pts. 1 & 2, S.H. 8476-9236 (Bairds Crossing), Rte. 11 & 87, Contr. PSC 8143, St. Lawrence Co.;
N. Y.—**C. P. Ward, Inc.,** 700 Hollenbeck St., Rochester 21, N. Y., CA $712,992, est. $748,000, 1.19 mi. Rte. 33A, & 47, Chili Rd., Pt. 1, S.H. 254; Howard Rd., S.H. 9350; Rapids, Rochester, S.H. 401, Montgomery Co. Grand total $10,764,972. Bids July 17, CD 7/21, under LB.

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany,
N. Y.—**West Shore Concrete Co.,** Hillburn St., Suffern, N. Y., CA $821,445, est. $820,000, reconstr. 2.99 mi. section Rte. 32 starting Vails Gate to Newbury city line, Orange Co., CD 8/13;
N. Y.—**H. L. Baughman, Inc.,** 1240 Jefferson Rd., Rochester 23, N. Y. CA $1,035,939, est. $1,120,000, reconstr. 1.51 mi. section Rte. 12E, Chaumont, beginning near west village line and extending eastward on new location south of present road to point near Point Salubrious Rd., incl. bridge over Chaumont River, Jefferson Co. Bids Aug. 7, awarded Sept. 5, CD 8/8, under LB.

† **Triton Constr. Corp.,** 66 Court St., Brooklyn 2, N. Y., LB $957,200, general reconstr. superstructure 35th Street Pier, Gowanus Bay, Contr. 3057A, BROOKLYN, N. Y. Comr. Marine & Aviation, Rm. 13, Pier 1, North River, New York 4, N. Y. Bids Sept. 4. CD 8/1.

▲ **Philsan Corp.,** 152 W. 42 St., New York, N. Y., LB $1,143,235, est. $1,100,000, (4 bidders), intake and intake tunnel for Sturgeon Point Filtration Plant, BUFFALO, N. Y. Erie County Water Auth., 338 Ellicott Sq. Bldg., Buffalo 3, N. Y. Bids Sept. 4. CD 8/11.

Heywood-Robinson, Inc., 114 Liberty St., New York 6, N. Y., LB $109,693 (13 bidders) addn. to Bldg. No. 196, New York International Airport, Contr. NYA-670.002, IDLEWILD, N. Y. Port of New York Auth., 111 Eighth Ave., New York 11, N. Y. Bids Sept. 2. CD 8/28.

▲ **General Railway Signal Co.,** 230 Park Ave., New York 17, N. Y., LB $9,745,400 (2 bidders), block signaling and interlocking equip. for rehabilitation of Broadway Line, BMT Div., Whitehall St. to Lexington Ave., Manhattan Boro, Contr. S-92, NEW

(Continued on page 138)

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of Interest to American contractors.

By Regions & Classes of Construction
(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED
New England — Middle West
Middle Atlantic — West of Mississippi
South — Far West

PROPOSED WORK
Water Supply — Public Buildings
Sewers, Waste Disposal — Mass Housing
Bridges — Commercial Buildings
Streets & Roads — Industrial Buildings
Earthwork, Waterways — Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

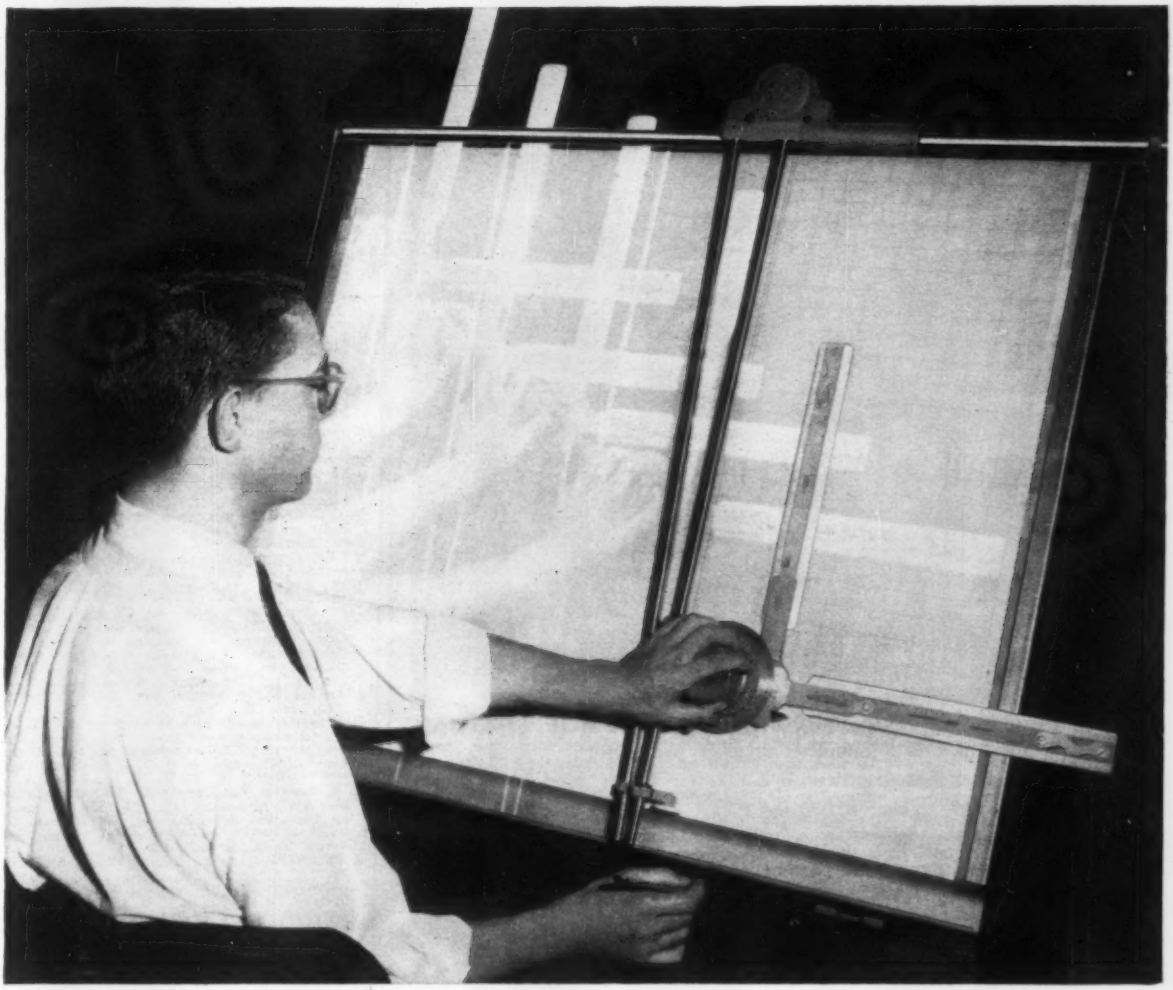
CD dates shown are of Construction Daily Issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over
ENR Engineering News-Record
CD Construction Daily

For additional reports see Construction Daily.



...for as little as $148.50

New K&E Paragon Auto-Flow gives you faster, easier drafting 5 ways...

The first time you use it, you'll know that K&E's light-weight Paragon® *Auto-Flow*™ Drafting Machine is a truly great advance in working ease and range. Here are 5 *specific* reasons why.

It's more versatile. Stays in perfect balance at any board angle, from vertical to horizontal. No adjustments needed, except a simple turn of a tension spring wheel for angles below 15 degrees.

It's more compact. The balance is built right into the machine itself. There's no need for counterbalances that project over the top of the board.

It's better made. Glides smoothly and easily on finely-ground, stainless steel rails with K&E precision and quality in every detail.

It's more adaptable. You get a full sweep of every size of board.

It's far easier to use. The scales move smoothly, at the slightest touch. Long lines up or across can be drawn in a single motion. Scales lock in place to eliminate "drift". Greater rigidity produces truer lines.

The 30" by 40" *Auto-Flow* costs only $148.50 . . . the 36" by 60" only $160. All standard sizes; left-hand models available. Mail coupon for details. 1265

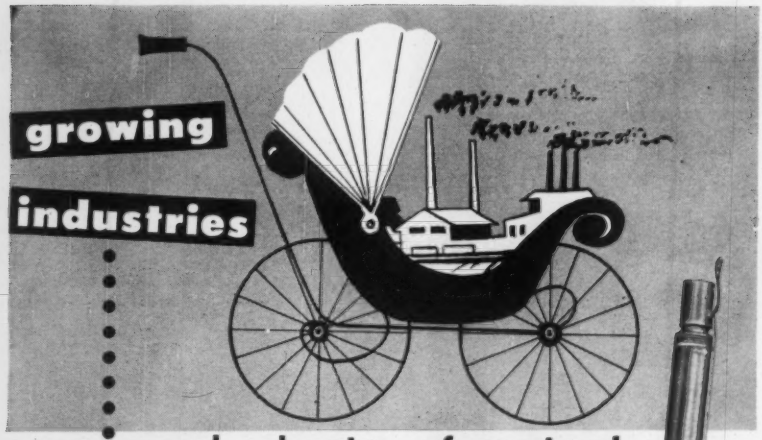
KEUFFEL & ESSER CO. Dept. EN-9, Hoboken, N. J.

☐ Please send information on the new K&E Paragon *Auto-Flow*. ☐ Please arrange a demonstration for me.

Name & Title: _____

Company & Address: _____

_____



•need plenty of water!

. . .and dependable

REDA *Submergible* **PUMPS**

will provide
the water needed for *all* of your industrial requirements!

Reda manufactures a complete range of pumps for:

- wells as small as 4 inches
- lifts from 30 to over 10,000 feet
- capacities from five to over 1000 G.P.M.

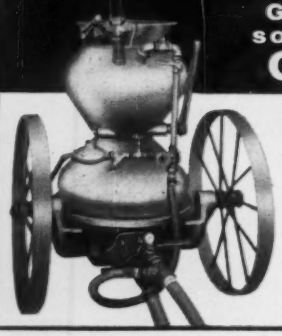
Reda Pumps are tried and proven! *Over 100,000* are installed for homes, farms, industries, municipalities . . . *wherever dependable, modern water service is required!*

Write for Industrial Pump Bulletin R-432. Complete information will be furnished promptly.

SIGN OF QUALITY SUBMERGIBLE REDA PUMPS

REDA PUMP COMPANY
BARTLESVILLE, OKLAHOMA
World's largest manufacturer of Submergible motors and pumps for over 35 years

CEMENT GUN COMPANY
Gunite® Contractors and sole manufacturers of the
CEMENT GUN®



GUNITE® . . . sand-cement product of the **CEMENT GUN®**

FORTY-SEVEN YEARS AS GUNITE® SPECIALISTS

PRE-STRESSED TANKS
RESERVOIR LININGS
PRESSURE GROUTING
CONCRETE REPAIRS
STEEL ENCASEMENT
STACK & BUNKER LININGS
REFRACTORY LININGS
SAND-BLASTING

Call us for information or bids

Empire State Bldg., New York 1, N. Y.
General Offices, Allentown, Pennsylvania HEmlock 2-1002

(Continued from page 136)

YORK, N. Y. New York City Transit Auth., Rm. 1310, 370 Jay St., Brooklyn 1, N. Y. Bids Sept. 5. CD 7/29.

NEW JERSEY—State Hy. Dpt., Kenneth D. Rice, secy., 1035 Parkway Ave., Trenton, Bids opened 9/2.

N. J.—**Counties Contg. & Constr. Co.**, 9 St. and Sedgely Ave., Phila., Pa., LB $199,650 (1 bidder) underground structures for traffic signal sys. at various intersections on New Jersey Hys., Contr. No. 1;

N. J.—**Jannarone Eng. Co., Inc.**, Lloyd Rd., Matawan, N. J., LB $101,458 (3 bidders), constr. Section 1 of Hamilton St. from Mile Run Brook to Franklin Blvd., Fed. Aid Sec. Proj. No. DS-232 (2), Franklin Twp., Somerset Co. CD 8/14.

Tenafly Asphalt Co., 22 Jersey Ave., Tenafly, N. J., LB $233,984 (6 bidders) Section 3 of Eastside Sewer, Van Emburgh Ave. east of Rte. 17, RIDGEWOOD, N. J. Village, Village Hall, Ridgewood, N. J. CD 6/20.

A. J. Schrader, Taylor, Pa., LB $544,180, Scranton flood protection proj. on Lackawanna River, incl. more than 2 mi. dredging and concrete works Scranton in Lackawanna Co., PENNSYLVANIA. Pa. Dpt. Forest & Waters, 512 Educ. Bldg., Harrisburg, Pa. Bids Aug. 29. CD 8/7.

† **Robert Irwin**, Honesdale, Pa., CA $153,952, relocation 2 cemeteries in Dyberry Reservoir area, near Honesdale, ENG-36-109-58-129, PENNSYLVANIA U. S. Eng., 2365 Abbotsford Ave., Phila., Pa. Bids July 2. CD 6/26, under Unclassified.

Helmark Constr. Co., 892 N. Markoel St., Phila., Pa., LB $167,452, water mains, Bid 2092, PHILA., PA. Phila. Dpt. Procurement, City Hall Annex, Phila., Pa. Bids Aug. 26. CD 8/12.

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore; Zone 2,

Contee Sand & Gravel Co., Laurel, Md., CA $908,412, P-631-25 and 26-32, three multiple span plate girder and steel beam bridges, Johnson Hanson Hy., Landover Rd., Prince George Co. Bids July 15. CD 7/22, under LB.

Taylor Constr. Co., Bethesda, Md., CA $581,758, Contr. 2108 W & S, North Belgrade Rd., Hyde Rd. and Court, Rockbridge Rd., Hillsboro Dr., Lovejoy St., Sisson St. and Court, Lockhart Place, Clara St., and Cloverhill Dr., Kemp Mill Estates, Silver Spring, HYATTSVILLE, MD. Wash. Suburban Sanitary Comn., Hamilton St., Hyattsville, Md. Bids July 7. CD 7/18, under LB.

Intercounty Constr. Corp., 4720 Baltimore Ave., Hyattsitol St. extension across Soldiers Home Grounds, Fed. ville, Md. LB $657,572 (3 bidders) grading North Cap-Aid. F-7 (6) WASH., D. C. D. C. Govt., Dpt. Hys., 499 Pa. Ave. N. W., WASH., D. C. CD 8/12.

P. A. Buchanan Pipe Line Constr. Co., 630 Woodlawn Ave. S.W., Birmingham, Ala., CA $500,000, natural gas lines, New Castle Co., Del. and Wicomico Co., Md., DELAWARE and MARYLAND. Eastern Shore Natural Gas Co., Salisbury, Md.

▲ **DELAWARE**—State Hy. Dpt., at office of Chief Eng., Rm. 202, Hy. Admin. Bldg., Dover,

Del.—**Bitulithic Co.**, foot of Brill, Newark, N. J., LB $146,686 (7 bidders) resurf. 7.15 mi. existing highways from Woodside to Rising Sun and from Kenton to Blackiston's Crossroads, FAI Projs. S-91 (3) and S-204 (2), Kent Co.;

Del.—**James Julian, Inc.**, 405 duPont Rd., Elsmere, Del., LB $663,296 (5 bidders) reconstr. 1.05 mi. divided hy. of that portion of Limestone Rd., State Route 7, from Stanton to Kirkwood Hy., New Castle Co.;

Del.—**Henry C. Eastburn & Son**, Chestnut Hill and Marrow Rd., Newark, Del., LB $443,120 (6 bidders) widening and resurf. Route 18 from the Maryland line to Bridgeville, 6.6 mi. FAI F19-(3), Sussex Co. CD 8/27.

BUILDINGS—LB & CA

▲ **Osias Constr. Co.**, Biltmore Hotel, New York 17, N. Y., Owner Builds, $2,000,000, 16 story APARTMENT, 955-67 Madison Ave. and 29-37 E. 75th St., NEW YORK, N. Y. (Correction-owner). CD 8/4, under CA.

Zimmerman Builders, Inc., 100 W. Park Ave., Long Beach, N. Y., CA $114,320 (17 bidders) general constr. GARAGE and ADMINISTRATION BLDG., Mott St. west of Oceanside Rd., OCEANSIDE, N. Y. Sanitary Dist. No. 7, Town Hempstead, 3110 Long Beach Rd., Oceanside, N. Y. Bids Aug. 26. CD 8/22.

Meadowview, Inc., P.O. Box 277, Bayville, N. J. Separate Contracts. $350,000, RESIDENTIAL DEVELOPMENT Chain Blvd., etc., BAYVILLE, N. J. George W. Boylan, Highland Park, N. J., archt.

Cohen, Cohen & Weiss, c/o Rinehardt, 1 W. Main St., Somerville, N. J., Own Forces, $500,000, 25 HOUSES, Lamington Rd., BRANCHBURG, N. J.

Martin Wirsan, 1525 Leslie St., Hillside, N. J., CA Est. $350,000, 2 story OFFICE BLDG. addn., W. St. George Ave., LINDEN, N. J. Wiesan Furniture Co., 210 W. St. George Ave., Linden, N. J. Joseph & Jas. Centanni, 263 Clinton Ave., Newark, N. J., archts.

Impco, Inc., operating as Famelli Homes, 1050 Boulevard, New Milford, N. J., Own Forces, $500,000, 25 HOUSES, Main St. and Milford Ave., NEW MILFORD, N. J.

William Matthewson, 2805 Wesley Ave., Ocean City, N. J., CA $350,000, 70 unit MOTEL, incl. dining room, swimming pool and paving, OCEAN CITY, N. J. Impala Motel, c/o D. S. Sausman, Thompsontown, Pa. CD 2/27.

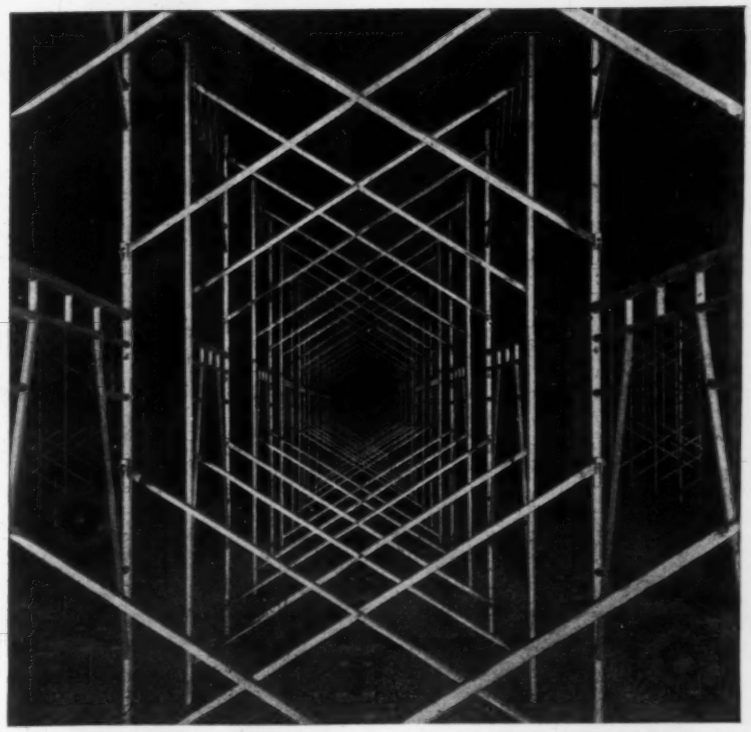
Frazee Bros., Ramshorn Dr., Allenwood, N. J., Separate Contracts, $350,000, RESIDENTIAL DEVELOPMENT, Willow St., etc., POINT PLEASANT, N. J.

Stanker & Galetto, Vineland, N. J., CA $97,236, MANUFACTURING PLANT and OFFICE, VINELAND, N. J. Edrudo Corp., c/o John A. Fletcher, archt., Vineland, N. J.

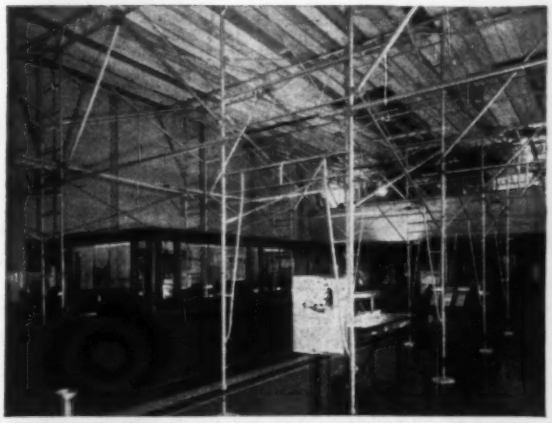
(Continued on page 140)

Scaffolding Methods . . .

A Picture Report on Efficient Ways to Scaffold, and Shore Concrete . . . by Patent Scaffolding Co.



NEAT, QUICK SLAB SUPPORT—Simple, easy-to-handle parts of prefab "Trouble Saver" Sectional Steel Scaffolding fit together rapidly to form this neat, efficient and safe, slab shoring for nine floors and roof of the new Southwestern Bell Telephone Co. Bldg., Fort Worth. 396 5'-high deep-trussed frames, 396 6'6"-high shallow-trussed frames and 396 3'-high deep-trussed frames are assembled with diagonal braces, fast-acting, patented SlideLoks and bases to the exact height required for the slab forming work. Neatness of job conditions undoubtedly contributed to time savings and safety for the contractor, Henger Construction Co.



HIGH FRAMES PERMIT BANKING AS USUAL—Providing for banking conditions as usual, during ceiling alterations for the Fidelity Union Trust Co., East Orange, N. J., is no trick at all for general contractor, Robert A. Howie, Jr. & Sons. 10'-high frames of "Trouble Saver"® Scaffolding, not only provide the ceiling-height working platforms, but also permit ample walk-through space for banking activity on the floor.

PIER SHORING ALSO MAKES FORMING SCAFFOLD—By assembling "Trouble Saver" Shoring 2'-wide ladder frames in 16'6"-high towers spaced 1'8" apart in one bay and 11½" apart in the other bay of this pier, two purposes are achieved. One, ample shoring support for a 3'9"-wide by 5'4"-deep concrete beam. Two, adequate platform area for forming work. Robert M. Murray, Inc., contractor for Horseheads Highway bridge job, East Corning, N. Y.

Complete scaffolding equipment and engineering service offered through nation-wide sales offices or representatives. Look under Patent Scaffolding in the Yellow Pages for your nearest source.

SALES **RENTALS**

FOR GREATER SAFETY...EFFICIENCY...ECONOMY

THE PATENT SCAFFOLDING CO., Inc.

38-21 12th Street, Dept. ENR, Long Island City 1, N. Y.

1550 Dayton Street, Chicago 22, Illinois • West Coast: 6931 Stanford Ave., Los Angeles 1, Calif.

In Canada: 355 Dufferin St., Toronto • *Branches in all Principal Cities*

(Continued from page 138)

David M. Hunt, 117 S. 17th St., Phila., Pa. CA $100,000, PILOT PLANT, CHESTER, PA. Scott Paper Co., foot of Market St., Chester, Pa. George M. Ewing Co., Western Savings Fund Bldg., Phila., Pa., archt.-engr.

D & L Constr. Co., 400 Shadeland Ave., Drexel Hill, Pa. Separate Contracts. $848,000, RESIDENTIAL DEVELOPMENT, GLADWYNNE, PA.

Rosemore Bldg. Co., 1518 Walnut St., Phila., Pa. Separate Contracts. $372,000. 3 APARTMENT BLDGS., Easton Rd., GLENSIDE, PA. Davis Poole & Sloan, 220 S. 16th St., Phila., Pa., archt.

▲ Norfran Corp., 1411 City Line Ave., Phila., Pa., Separate Contracts, $1,500,000, 100-unit RESIDENTIAL DEVELOPMENT, Glendale Rd., etc. HAVERTOWN, PA. Henry Berg, 1411 Walnut St., Phila., Pa., archt.

E. B. Dilworth, Newtown Square, Pa. Separate Contracts. $350,000. RESIDENTIAL DEVELOPMENT, Saw Mill Rd., etc., NEWTOWN SQUARE, PA.

Joseph E. Hefferman & Son, Conshohocken, Pa. CA $400,000. APARTMENT, 740 Wolcott St. PHILA., PA. Cherokee Apartments, c/o Contractor. Oscar Stonorov, 121 S. 17th St., Phila., Pa., archt.

▲ William Sterling & Co., 2525 Pine St., Phila., Pa., LB $1,079,000 general contract Norris Low-Cost HOUSING Extension of 101-units, PHILA., PA. Phila. Housing Auth., 142 S. 15 St. Phila., Pa. CD 11/15/56.

Alessi Homes, Inc., Turnbridge Rd., Haverford, Pa. Separate Contracts. $350,000, RESIDENTIAL DEVELOPMENT, Morris Lane, etc., WALLINGFORD, PA.

Sloan & Burrows, Wallingford, Pa. Separate Contracts. $350,000, RESIDENTIAL DEVELOPMENT, Locust Lane, etc., $350,000, RESIDENTIAL DEVELOPMENT, Crum Creek Rd., WALLINGFORD, PA.

Frank J. Rossi, Malvern, Pa. CA $125,700, STORAGE AREA and COMPOSTING AREA, WEST CHESTER, PA. Grocery Store Products Co., West Chester, Pa. Roy F. Weston, Inc., Newton Square, Pa., engr.

Kimberly Constr. Co., 1300 First National Bank Bldg., Baltimore 2, Md. Separate Contracts, $768,400, 113 brick, block HOMES, Charlesmont Rd. near BALTIMORE, MD.

▲ Henry A. Knott, Inc., 2406 Greenmount Ave., Baltimore 18, Md. CA Est. $2,500,000, 3 story, concrete, brick MOTEL "Sheraton-Broadway Inn", Broadway and Orleans St., BALTIMORE, MD. Baltimore Urban Renewal Comn., 704 E. Eager St., Baltimore 2, Md. Sheraton Belvedere Corp., lessee. Stephenson Cochran & Wing, 928 N. Charles St., Baltimore 1, Md., archts.

Lawrence Constr. Co., 500 Woodbourne Ave., Baltimore 12, Md., LB $711,411, est. $650,000, stone, steel, concrete DINING HALL and STUDENT UNION BLDG., BALTIMORE, MD. Loyola College, Charles St. Ave., Baltimore, Md. Bids Aug. 28. CD 8/5.

Morrow Brothers, Inc., 2315 N. Charles St., Baltimore 18, Md. CA $367,500, 3½ story Jenkins HALL Addn., BALTIMORE, MD. John Hopkins University, Homewood, Baltimore 18, Md. Bids Aug. 20. CD 8/12.

Kent Engineering Co., 516 Rhode Island Ave. N.E., Wash., D. C. LB $453,801 (5 bidders), 14 room ELEMENTRY SCHOOL, Capitol Heights, MARLBORO, MD. Prince George's County Bd. Educ., Mariboro, Md. R. L. Senseman, 7705 Georgia Ave. N.W., Wash., D. C., archt. Bids Aug. 29. CD 8/1

▲ John A. Volpe Constr. Co., 261 Constitution Ave. N.W., Wash., D. C. LB $2,324,000 (16 bidders) MEN'S DORMITORY and CAFETERIA for Georgetown University, 37th and "O" Sts. N.W., WASH., D. C. Georgetown University, 37 and "O" Sts. N.W., Wash., D. C. Bids Sept. 4.

SOUTH

HEAVY CONSTRUCTION—BA

La., DeRidder—BA 9/24—City, City Hall, (1) 500,000 gal. elevated water tank, (2) deep water wells, (3) addns. alterations to water treatment plant. Barnard & Burk, 1023 Nicholson St., Baton Rouge, consult. engrs. Plans deposit $5 each on Projects 1 and 2; $15, Proj. 3.

La., New Orleans—BA 9/24—New Orleans Sewerage & Water Bd., City Hall, Contr. 262-D, 1,370 lin. ft. 25 ft. rein.-con. lined and covered drainage canal in Prentiss to St. Anthony Ave. and 2,600 lin. ft. 16 ft. rein.-con. line and covered drainage canal in St. Anthony Ave. from Prentiss Ave. to New York St. *Extended date. Plans deposit $10. CD 8/22.

† Va., Chantilly—AIRPORT IMPRVS.—BA 9/24—Civil Aeronautics Admin., Room 2615, T-5 Bldg., 16th and Constitution Ave. N.W., Wash., D. C., grade, drain, and related work Washington International Airport. Plans deposit $25. CD 5/27.

† Tennessee—BA 9/25—U. S. Eng., P. O. Box 97, Memphis, Zone 1, bank grading, constr. ballasting and sinking lumber mattress, placing gravel blanket, riprap paving, constr. root dike and placing stone fill along existing pile dikes, ENG-40-041-59-44.

† Fla., Homestead—AIR BASE IMPRVS.—BA 9/30—U. S. Base Procurement Office, Homestead Air Force Base, modification Bldg. 350, Homestead Air Force Base, IFB-08-621-59-7. CD 9/9.

† Fla., Key West—BA 10/1—AIR STATION IMPRVS.—P. Wks. Dpt., Naval Air Station, loading platform for cold storage plant Bldg. 100, Naval Station, NBy-1898, Spec. 18498/59.

† Florida-Georgia — TRAFFIC CONTROL — BA 10/3 — General Service Admin., Business Service Center, 50 7th St. N.E., Atlanta, Ga., Air Route Traffic Control Center Buildings, Nassau Co., Hilliard, Fla. and Henry Co., Hampton, Ga. Plans deposit $50.

La., Lake Charles—BA 10/7—Calcasieu Parish Police Jury, Court House Bldg., Lake Charles, drainage imprvs. of W-19 Lateral No. 2, Buxton Creek in Calcasieu Parish to contain 49,000 cu. yd. channel excav.

† Ala., Selma—AIRMEN'S DORMITORY—BA On Or About 10/9—U. S. Eng., 2301 Grant St., Mobile, airmen's dormitory, Craig Air Force Base, ENG-01-076-59-19. CD 9/17/57.

BUILDINGS—BA

S. C., Beaufort—SCHOOL—BA 10/14—Beaufort County School Dist. 1, King and Wilmington Sts., Mossy Oaks Junior-Senior High School. $500,000. Plans deposit $50. Jules D. Leving, 204 W. St., archts.

▲ Ala., Florence—HOSPITAL—BA 11/15—Eliza Coffee Memorial Hospital, hospital addn. $1,500,000. Northington, Smith & Kranert, 1949 Florence Blvd., archts. CD 8/7.

BUILDINGS—SLC

Ky., Mount Sterling—HOSPITAL—Mary Chiles Hosp. Bd. Trustees, soon lets contract constr. hospital addn., alterations. $600,000. Extended date. CD 8/18.

HEAVY CONSTRUCTION—LB & CA

▲ WEST VIRGINIA—State Road Comn., Charleston, Zone 5,

Ralph Myers Constr. Corp., P.O. Box 230, Salem, Ind., CA $6,184,325, grading, draining 6.351 mi. Secondary 60/2 to Mud River, Interstate No. 64, Proj. I-64-1(9) 13 and D.F. 187(20), Cabell Co. Bids Aug. 26, awarded Sept. 4. CD 8/29, under LB.

▲ SOUTH CAROLINA—State Hy. Dpt., Hotel Columbia, Columbia,

Clement Bros., Lenoir, N. C. CA $3,158,382, grading, etc. 12.316 mi. Int. Rte. 26 for constr. 4 lane divided hy. from Rd. 49, Rte. 296, S.C. Docket No. 42.488, F.A. Proj. I-26-2 (26), Spartanburg Co. Bids July 15 CD 7/23 under LB

▲ Ray D. Lowder, Inc., P.O. Box 1101, Albemarle, N. C. LB $1,046,558, Divs. 1 and 2. water supply and distr. lines, WOODRUFF, S. C. Woodruff-Roebuck Water Dist., Woodruff, S. C. Bids Aug. 26. CD 7/30; Boyle Constr. Co., Box 471, Sumter, S. C. LB $221,384, Div. 3 (Woodruff, S. C.).

Stiles Constr. Co., 1513 New Buncombe Rd., Greenville, S. C. LB $111,449, telephone lines, Town and Union Counties, GEORGIA. Standard Telephone Co., Cornelia, Ga. Bids Sept. 2. CD 8/13.

Dixie Constr. Con., 747 Wheaton St., Savannah, Ga., LB $296,230, est. $350,000 sanitary sewers in Windsor Forest Subdivision, SAVANNAH, GA. City, City Hall, Savannah, Ga. Bids Sept. 5. CD 9/4.

▲ FLORIDA—State Rd. Dpt., Tallahassee,

Duval Eng. & Constr. Co., Box 1588, Jacksonville, Fla., LB $1,079,280, est. $1,200,000, 4 lane 9 in. c. conc. pavement, b. conc. surf. course and binder course, surf. treat. shoulder; drainage structure; 3 concrete slab deck grade separation bridges (streets and 1 railroad) 377.39 ft. with prestressed beams on concrete piles; aluminum handrails lighting fencing, removal of bldgs. and incidental items 1.117 mi. between 26th and Kenmor Sts. In Jacksonville, FAI Proj. No. I-95-5(13) 346 Job No. 72020-3485, SR 9, Duval Co. CD 8/29.

▲ FLORIDA—State Rd. Dpt., Tallahassee,

White Constr. Co., Inc., Chiefland, Fla., CA $2,497,056 (5 bidders) road and bridges, 4.744 mi. FAP I-4-2 (9) Job 7911-420 SR 400, Volusia Co. Bids June 26, awarded Sept. 5. CD 7/3, under LB.

† Fairbanks, Morse & Co., 600 S. Michigan, Chicago, Ill., CA $988,001, pumps and equipment for Pumping Station 8, Central and Southern Flood Control Project, FLORIDA. U. S. Eng., P. O. Box 4970, Jacksonville, Fla. CD 9/6/57.

Rust Engineering Co., 2316 4th Ave., N. Birmingham, Ala., CA $508,438, steam and electric generating facilities, utilities, Florida State Hospital, CHATTAHOOCHEE, FLA. Bd. Comrs. State Institutions, Tallahassee, Fla. Bids June 25. CD 7/11, under LB.

† Duval Eng. & Contg. Co., 1746 E. Adams, Jacksonville, Fla., CA $92,327 constr. Salvage Area Road, Patrick Air Force Base, ENG-08-123-59-1; COCOA, FLA. U. S. Eng., P.O. Box 4970, Jacksonville, Fla. CD 8/12.

N. G. Harrison & Assocs., 5137 NE 2 Ave., Miami, Fla. LB Item 1 $351,846; Item 2 $488,262 high pressure water system extension Area East of Miami Ave. from Southeast 2 St. to NE 20 St., MIAMI, FLA. City Comn., Municipal Justice Bldg., 1145 NW 11 St., Miami, Fla. Bids Sept. 3.

▲ Fred Howland, Inc., 1451 NW 20 St., Miami, Fla., LB $1,590,041 incinerator, Jefferson St. and Washington Ave., Coconut Grove, MIAMI, FLA. City Comn., Municipal Justice Bldg., 1145 NW 11 St., Miami, Fla., Alex. B. Konnonoff, 620 NW 32 St., Miami, Fla., and Fay, Spofford & Thorndike, Inc., 11 Beacon St., Boston, Mass., engrs. Bids Sept. 3. CD 7/30.

▲ ALABAMA—State Hy. Dpt., Montgomery, Bids opened 8/29,

Ala.—Newell Roadbuilders, Inc., Hope Hull, Ala., LB $1,104,369, grading, draining 6.787 mi. from near Barnett roads NE on Interstate Rte. 65, Conecuh and Escambia Counties; LB $902,921, grading, draining 8.244 mi. from NE of Atmore NE on Interstate Rte. 65, Escambia Co.;

Ala.—B. F. Williams Constr. Co., Ozark, Ala., LB $555,113, grading, draining 4.411 mi. from N. of Atmore NE on Interstate Rte. 65, Escambia Co.; LB $89,467, grading, bit. treatments 3.31 mi. from US 82 east to Mamie, Montgomery Co.;

Ala.—Moss-Thornton, Leeds, Ala. and Clyde O. Mitchell, 104 N. 44 St., Birmingham, Ala., LB $3,358,802, b. conc. 8.291 mi. from E. of Jemison NW to Shelby Co. line on Interstate Rte. 65, Chilton Co.;

Ala.—Cleveland Industries, Inc., 2865 Coventry St., Cleveland, Ala., LB $247,246, clearing, grubbing, culverts, bridge culverts, removal of muck and removal of bridge structures 13.097 mi. US 231 from S. of Dothan to Fla. line, Houston Co.;

Ala.—Robert R. Dunn Constr. Co., Troy, Ala., LB $81,087, base and bit. treatments 11.382 mi. from Tolbert S. to Gilly Mill and Dale Co. line NE to Brannons Store, Henry Co.;

Ala.—Dyson Constr. Co., Talladega, Ala., LB $85,974, base and bit. treatments 9.445 mi. from US 431 SE to Ala. 9 N. of Hollis School and from US 7 NE to Fruitdale-Oak Level Rd., Cleburne Co.;

Ala.—Interstate Constr. Co., 820 Harsh Ave., Nashville, Tenn., LB $126,104, bit. road mix 23.967 mi. from Ala. 36 SE of Somerville SE to US 231, Blount, Cullman and Morgan Counties;

Ala.—H. M. Pfunkett Constr. Co., Blountsville, Ala., LB $181,582, clearing, grubbing and culverts 7.342 mi., U.S. 78 between Birmingham and Walker Co. line, Jefferson Co.;

Ala.—Raley Constr. Co., Inc., Aberdeen, Miss., LB $98,003, grading, bit. treatments 0.731 mi. Ala. 17 at Vernon, Lamar Co.;

Ala.—J. O. Tate Constr. Co., Forkland, Ala., LB $75,896, dredging, draining, bit. treatments 3.558 mi. from Perry Co. line SE toward Ala. 5, Dallas Co.;

Ala.—Vick Constr. Co., Inc., Tuscumbia, Ala., LB $151,889, grading, bit. treatments and bridge 6.863 mi. from Spring Creek SE to Ala. 20, Proposal 1, Lawrence Co. CD 8/19.

ALABAMA—State Hy. Dpt., Montgomery, Bids opened 8/29,

Ala.—T. G. Strawhorn, Fulton, Miss., LB $215,725, interchange and street imprvs. in Decatur, Morgan Co.;

Ala.—H. C. Jordan, Ozark, Ala., LB $105,033, bridge over Styx River NE of Robertsdale and bridge over Dyas Creek east of Bay Minette, Baldwin Co. CD 8/19.

▲ LOUISIANA—Dpt. Hys., Rm. 307, Hy. Office Bldg., Baton Rouge,

La.—Taylor-Wheless Co., Inc. & W. B. Fairchild Constr. Co. Ltd., Hy. 49 No. By-Pass, Box 31, Jackson, Miss., CA $5,500,935, grading, grade separation structures, c. conc. 9.526 mi. Minden By-Pass Hy. Rte. I-20, SP Nos. 740-00-11 and 740-00-12: FAP Nos. I-20-1 (8) 44 (I-540(8) and I-20-2(4) 54 I-541(4), Webster and Bienville Parishes;

La.—W. R. Fairchild & J. W. Snowden, Hy. 49, N. By-Pass, Box 31, Jackson, Miss., CA $2,877,806, grading, small drainage structures, bridge and overpass structures, 6.141 mi. Jennings-Egan Hy., Rte. I-10, SP Nos. 450-03-03 and 450-04-07: FAP Nos. I-10(16)65 and I-10-2(2)66, Jefferson Davis and Acadia Parishes. CD 7/28, under LB;

La.—Lafayette Materials, Box 4245, Baton Rouge, La., CA $854,634, wid'n existing concrete pavement 15,311 mi. DeRidder-Leesville Hy. Rte. LA-US 171, SP Nos. 24-05-12 and 24-06-12, FAP Nos. DF 62 (6 & DF-151-(3), Beauregard and Vernon Parishes;

La.—Coastal Contractors, Perkins Rd., P. O. Box 911, Baton Rouge, La., CA $730,693, wid'n. existing concrete pavement surf. bit. hot mix, etc. 11.947 mi. Winnsboro-Winner Hy., Rte. LA 15. SP No. 26-06-12 FAP No. F-198(4), Franklin Parish. Grand total $9,964,068. Bids July 23. CD 7/30, under LB.

▲† Great Lake Dredge & Dock Co., 228 N. LaSalle St., Chicago, Ill., CA $2,246,526, 12,516,000 cu. yd. Chicot Pass Channel enlargement, Miles 85 to 89.0 (1950), Inv. No. 59-14, Iberia Parish, LOUISIANA. U. S. Eng., foot of Prytania St., New Orleans 9, La. Bids Aug. 14. CD 8/21, under LB.

Barnet Brezner, P. O. Box 1030, Alexandria, La., LB $56,780, water dist. sys., water treatment facilities, SIMSBORO, LA. Mayor & Board, Simsboro, La. Bids Aug. 25. CD 8/20.

† George A. Fuller Co., Peachtree Bldg., Atlanta, Ga., CA $600,000, off-site supporting facilities to Capehart Housing, Fort Campbell, Ky. and Clarksville Base, Tenn., ENG-40-058-58-2, KENTUCKY and TENNESSEE. U. S. Eng., 306 Federal Office Bldg., Nashville, Zone 2, Tenn. Bids July 2. CD 7/9, under LB, Public Buildings.

Campbellsville Water & Sewer Comn., Campbellsville, Ky., rejected bids Aug. 5, industrial waste sys. CAMPBELLSVILLE, KY. $75,000. Will re-advertise. CD 7/18.

City, City Hall, Harrodsburg, Ky., Owner Builds, $80,000, pumping station, sewer-lines, etc. HARRODSBURG, KY.

Cecil Morgan Constr. Co., Clarksville, Tenn., CA $81,000, airport grading and drainage, HOPKINSVILLE, KY. Hopkinsville & Christian Co. Airport Bd., Hopkinsville, Ky.. Bids Sept. 2. CD 8/29.

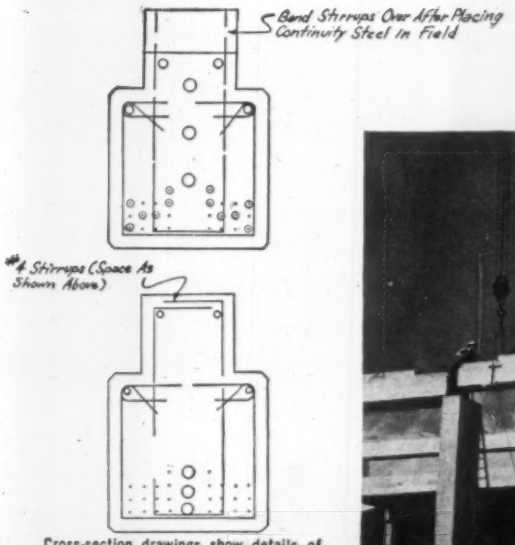
BUILDINGS—LB & CA

Harry B. Graham Co., 216 3 NE, Charlottesville, Va. CA $898,892. STUDENT CENTER, WILLIAMSBURG, VA. College of William & Mary, Williamsburg, Va. Bids July 15. CD 7/21, under LB.

▲ Bradford Builders, Inc., 132 Aragon Ave., Coral Gables, Fla., LB $5,000,000, MOTEL, (Pier 66), 2301 SE 17 St., FORT LAUDERDALE, FLA. Phillips Petroleum Co. 720 SW 18 St., Bartlesville, Okla. Bids Aug. 18. CD 8/14.

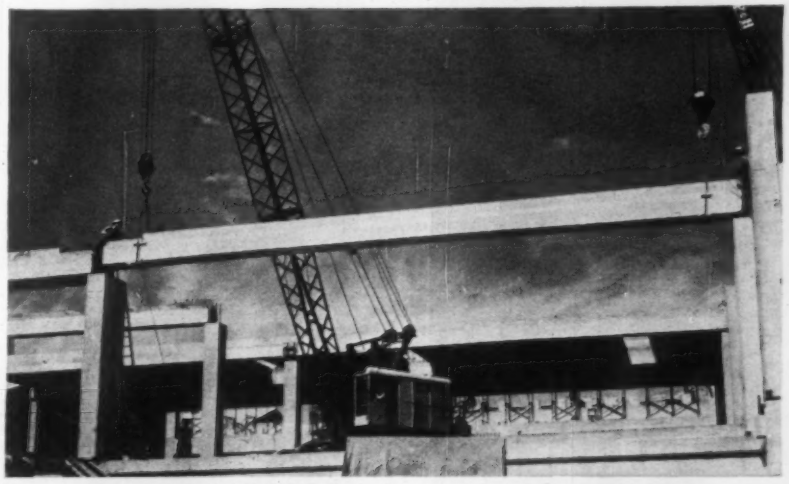
▲† U. S. Eng., P. O. Box 1169, Mobile, Ala., rejected bids June 23, 8 mi. RAILROAD TRACKS, 90,000 sq. yd. bit. surf. roads and parking areas, 3 ammunition transfer platforms, etc., at Anniston Ordinance

(Continued on page 143)



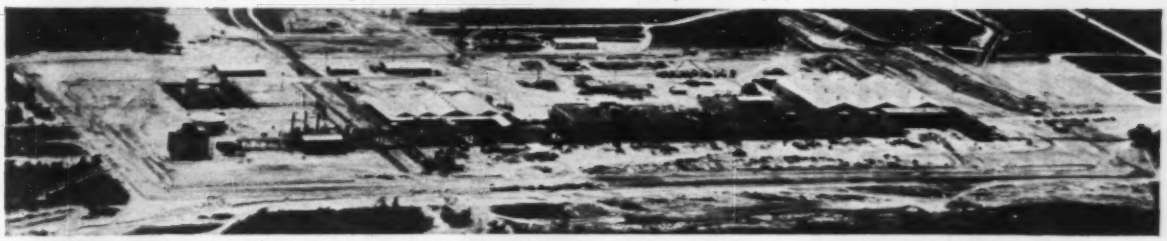
Cross-section drawings show details of typical 59-ft 8-in. inverted tee girder at one end and mid-span. The three Freyssinnet tendons, each with 18-0.196 in. dia. wires, were deflected to provide increased strength.

Prestressed concrete consultant: Ross H. Bryan, Consulting Engineer, Nashville, Tennessee.
Prestressed concrete manufacturer: Southern Prestressed Concrete Company, Inc., Pensacola, Florida.
General Contractor and prestressed concrete erector: J. A. Jones Construction Company, Charlotte, N. C.
Architect-Engineers: Lockwood Greene Engineers Inc., New York, N. Y.



Here, prestressed concrete roof girder is lowered into place.

Aerial view of nearly completed plant. Entire facility covers an area of 1800 acres and will employ some 425 people.



Main manufacturing building of $25,000,000 American Cyanamid plant built of prestressed concrete

American Cyanamid Company's New Creslan* Acrylic Fiber plant near Milton, Florida, is one of the world's most modern fiber production facilities.

The main manufacturing building is constructed of prestressed concrete. At peak production, this plant will turn out 27,000,000 lbs of Creslan fiber annually. The raw material for this synthetic fiber will be supplied by Cyanamid's plant in New Orleans.

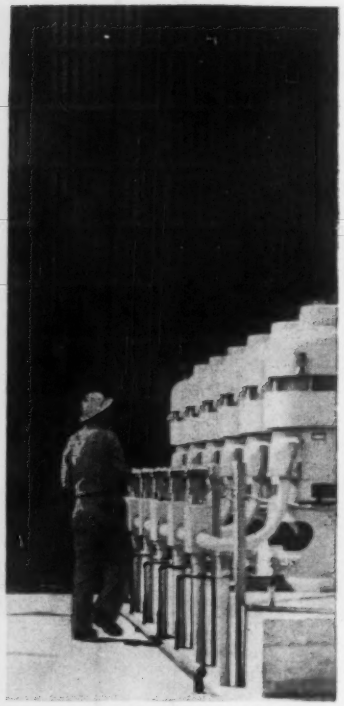
Southern Prestressed Concrete Company, Inc., Pensacola, Florida, manufacturers of all prestressed members for the plant, in describing the main manufacturing building, stated: "The column spacing was uniform throughout at 25 x 60 ft; column heights varied over a range of from 13 to 33 ft. Because of the location in a coastal area, the structure was designed for a wind load of 40 psf. The roof deck was designed for uniform dead and live loads, and also for a number of concentrated loads. Special girder designs were used for the larger concentrated loads; each girder being 24 inches wide with heights from 36 to 40 inches. To reduce vertical height, the girders were inverted tee in shape, with the roof members resting on the ledge thus formed. The roof deck members are 14 inches deep by 4-ft wide double tees. Also furnished were floor and roof panels for a corridor of about 1000 ft in length. The entire job required over 2000 precast, prestressed pieces and about 100 miles of Roebling prestressed wire and strand."

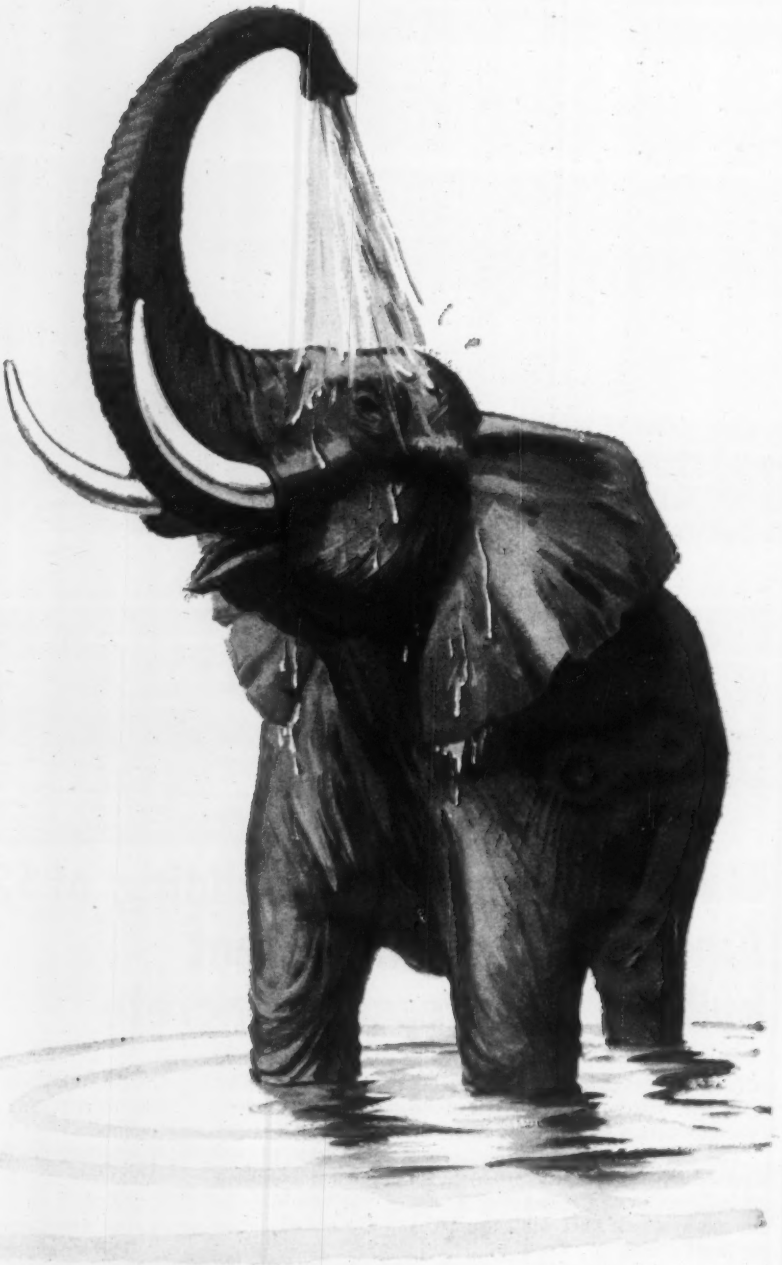
This structure is one of the newer and bigger examples of prestressed concrete's ever-growing acceptance throughout the United States. In addition, it bears out Roebling's conviction that prestressed concrete is fast becoming a mode of construction with benefits that can only be considered impressive. Roebling's role in the prestressed field goes back to the introduction of the method in the United States. We invite inquiries of any nature on the subject of prestressed concrete. An inquiry to Construction Materials Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey, will bring a prompt reply.

*Creslan, Reg. T. M.

ROEBLING

Branch Offices in Principal Cities
Subsidiary of The Colorado Fuel and Iron Corporation





to cooling: a solution

By trunk or by tower, evaporative cooling has proved its practicability. Contributing to the effectiveness of this method of industrial cooling is the Peerless vertical industrial service pump. Efficient, versatile and economical, the Peerless vertical pump offers optimum performance in all ranges, plus these *extra value* Peerless features: *unitized pump-motor manufacture*, for perfect alignment, increased pump durability; *improved suction manifolding* for better water intake, less friction; *advanced vertical turbine design* for highest efficiency, maximum performance; *designed-in flexibility* of a modern pump, for easy adaptation for future system requirements.

PEERLESS PUMPS

WRITE FOR ILLUSTRATED BULLETIN NO. B-505

Putting Ideas to Work

fmc FOOD MACHINERY AND CHEMICAL CORPORATION

Peerless Pump Division

Plants: LOS ANGELES 31, CALIFORNIA and INDIANAPOLIS 8, INDIANA

Offices: New York; Atlanta; St. Louis; Phoenix; San Francisco; Chicago; Fresno; Los Angeles; Plainview and Lubbock, Texas; Albuquerque. Distributors in Principal Cities. Consult your telephone directory.

(Continued from page 140)

Depot, ANNISTON, ALA., LB $1,797,604. CD 7/7, under LB.

Andrew & Dawson, Box 1301, Montgomery, Ala., LB $367,370, 25 bed HOSPITAL, CENTERVILLE, ALA., Bibb Co. Hospital Bd., Centerville, Ala. Bids Aug. 21. CD 8/1.

▲ McMichael Constr. Co., Box 508, Shreveport, La., CA $2,266,444, est. $2,184,000, Proj. No. 41, 3 story, 1,500 capacity SENIOR HIGH SCHOOL, Wyngate Dr., SHREVEPORT, LA. Caddo Parish School Bd., Court House, Shreveport, La. Bids Aug. 5. CD 8/8, under LB.

Whittenberg Constr. Co., S. Floyd St., Louisville 16, Ky., CA Est. over $500,000, SHOPPING CENTER to incl. supermarket and retail stores, LOUISVILLE, KY. Bon Aire Shopping Center, Rita and Bon Aire Aves., Louisville, Ky. E. W. Augustus, 125 Breckenridge Lane, Louisville 7, Ky., archt.

Rostetter Constr. Co., 4402 Shelbyville Rd., Louisville 7, Ky., LB $670,000, WAREHOUSE, OFFICE and railroad siding near Strawberry Yards (L & N. R. R. Co.), LOUISVILLE, KY. Co-operative Seed & Farm Supply Co., 7 and Main Sts., Richmond, Va. Bids Sept. 3. CD 8/14.

† Grinnell Co., 1615 S. Kings Highway, St. Louis, Mo., CA $688,024, SPRINKLER INSTALLATION Bldgs. C-337, C-537, C-637 at Atomic Energy Plant, PADUCAH, KY. Atomic Energy Comn., 1901 Constitution Ave. N. W., Wash., D. C. Bids June 20. CD 7/3, under LB.

L & M Constr. Co., 843 Vance Ave., Memphis, Tenn. LB $494,494. FINE ARTS BLDG., for Austin Peary State College, CLARKSVILLE, TENN. State Purch. Dpt., Nashville, Tenn. Speight & Hibbs, Public Square, Clarksville, Tenn., archts. Bids Aug. 5.

Brownlee-Kersterson Constr. Co., 2437 Henson Rd., Knoxville, Tenn. LB $559,516. SHOPPING CENTER, KNOXVILLE, TENN. Western Plaza Shopping Center, c/o David B. Liberman, archt., 605 Walnut N.W., Knoxville, Tenn.

W. W. Grubbs Co., Maryville, Tenn. CA $710,370 Beardsley JUNIOR HIGH SCHOOL addn., KNOXVILLE, TENN., City Bd. Educ., Knoxville, Tenn., Bids Aug. 14, CD 9/2.

Brownlee-Kesterson Constr. Co., 2435 Henson Rd., Knoxville, Tenn. CA $559,000. SHOPPING CENTER, KNOXVILLE, TENN. McClure Realty Co., 4511 Kingston Pike SW, Knoxville, Tenn. Awarded Aug. 21. CD 8/4.

▲ Pennington & Mackebee, La Follette, Tenn., CA $1,764,000. PATIENT TREATMENT BLDG., incl. 12 patient residences, practice house chapel and swimming pool, lake and pavilion at Eastern State Hospital for the Mentally Ill, KNOXVILLE, TENN. State Purch. Dpt., Nashville, Tenn. Awarded Aug. 20. CD 6/18, under LB.

Johnson & Galyon Constr. Co., 1925 Broadway N. E., Knoxville, Tenn. LB $359,357. HOME ECONOMICS BLDG., KNOXVILLE, TENN. University of Tennessee, Knoxville, Tenn. Barber & McMurray, 2505 Kingston Pike SW, Knoxville, Tenn., archts. John Neal, c/o University of Tenn., Knoxville, Tenn., engr. Awarded Aug. 25. CD 6/25/53.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

O., Cleveland—BA 9/25—Bd. Comrs. Cuyahoga Co., Court House, Zone 13, bridge on Old Mill Rd. over Chagrin River, Gates Mills. $151,400. Albert S. Porter, Standard Bldg., Zone 13, city engr. CD 6/23.

BUILDINGS—BA

O., Dayton—GARAGE—BA 9/26—City, City Hall, centralized city garage. $689,317. Plans deposit $50. Lorenz & Williams, 2600 Far Hills Ave. archts. CD 4/4/57.

O., Cuyahoga Falls—WING ADDN., etc.—BA 9/30—Ohio State Dpt. P. Wks., State Depts. Bldg., Columbus, wing addn. and laundry bldg. extens., Summit County Receiving Hospital. $440,000. Plans deposit $25. Trefon Sagadencky, 420 Chestnut Blvd., archt. CD 10/10, under State Dpt. Mental Hygiene & Correction, Columbus, O., as owner.

▲ O., Youngstown — HIGH SCHOOL — BA 10/2 — Bd. Educ., 20 W. Wood St., Volney Rogers Junior High School, on southwest side. $1,000,000. Plans deposit $50. Smith, Friedman & Smith, Schween-Wagner Bldg., archts. CD 1/29.

Ill., Des Plaines—SCHOOL—BA 10/6—Bd. Educ., 767 Algonquin Rd., brick Maplebirch Elementary School. $400,000. Cone & Dornbusch, 100 N. LaSalle St., Chicago, archt. CD 7/9.

▲ O., Kent—SPEECH CENTER—BA 10/9—State Dpt. P. Wks., State Dpt. Bldg., Columbus, music-speech center at Kent State University, $3,500,000. Plans deposit $100. Mellenbrook Foley & Scott, 20 Beech St., Berea, archts. CD 10/16.

BUILDINGS—SLC

▲ Ind., St. Mary-of-the-Woods — CONVENT — Mother General, Sisters of Providence, soon lets contract, 4 story, 190x290 ft., rein.-con. masonry convent. $2,000,000. D. A. Bohlen & Son, 930 State Life Bldg., Indianapolis, archts.-engrs.

Mich., Grand Rapids—OFFICE—Michigan Bell Telephone Co., 1365 Cass St., Detroit, soon lets contract West Central Office Bldg.

▲ O., North Canton—FACTORY—The Hoover Co., North Canton, soon lets contract, 40,000

(Continued on page 145)

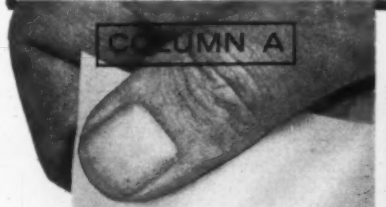
IF YOU'RE FAMILIAR WITH STANPAT

read column B only

IF YOU'RE UNFAMILIAR WITH STANPAT

read column A and B

COLUMN A



Thousands of firms save thousands of drafting hours with STANPAT

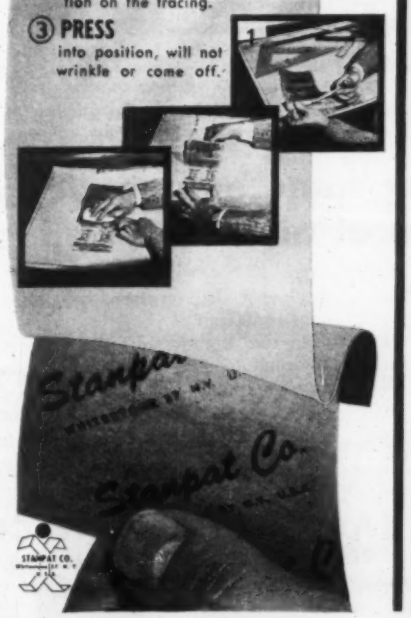
STANPAT—the remarkable tri-acetate that is pre-printed with your standard and repetitive blueprint items, easily transferred to your tracings by an adhesive back or front. Relieves time-consuming and tedious detail of re-drawing and re-lettering specification and revision boxes, standard symbols, sub-assemblies, components and cross-sections. Saves hundreds of expensive hours of drafting time and money, frees the engineer for concentration on more creative work.

so simple to use:

① **PEEL** the tri-acetate adhesive from its backing.

② **PLACE** the tri-acetate in position on the tracing.

③ **PRESS** into position, will not wrinkle or come off.



COLUMN B

NEW resin back STANPAT ELIMINATES GHOSTING, offers better adhesive qualities on specific drafting papers.

THE PROBLEM

Some of our longtime customers first called our attention to the "ghosting" problem. Certain tracing papers contain an oil which could be leeched out by the STANPAT adhesive (green back) causing a ghost.

THE SOLUTION

A new STANPAT was developed (red back), utilizing a resin base which did not disturb the oils and eliminates the ghost. However, for many specific drafting papers where there is no ghosting problem, the original (green back) STANPAT is still preferred.

WHICH ONE IS BEST FOR YOU?

Send samples of your drawing paper and we will help you specify. Fill out coupon below:

Dept. 48

STANPAT CO., Whitestone 57, N. Y.
Phone: FLushing 9-1693-1611

☐ Enclosed are samples of the drafting paper(s) I use (identify manufacturer). Please specify whether Rubber Base or Resin Base STANPAT is most compatible with these samples.

☐ Send literature AND samples of STANPAT.

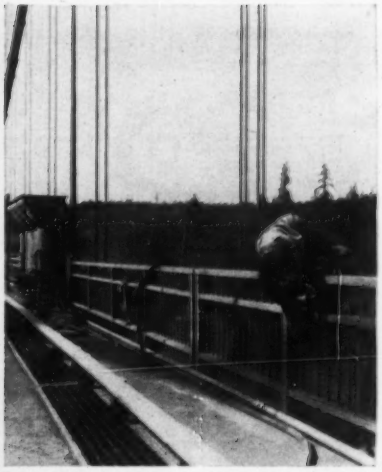
☐ Please quote price on our enclosed sketches which we are considering to have pre-printed by STANPAT.

NAME_____

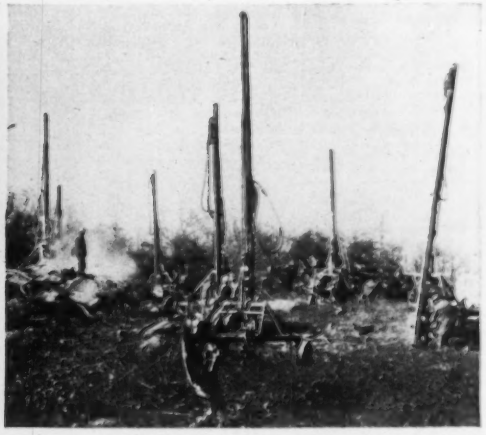
FIRM_____

ADDRESS_____

CITY_____ ZONE____ STATE____



1565 CFM OF 110 LB. AIR FOR BRIDGE CLEANING: Runnels Industries used these 3 Jaeger rotary compressors (two 600's and a 365), connected to a 3″ air line, to supply twelve 5/16″ sandblasting nozzles spread out over a mile along Tacoma Narrows Bridge, Washington. They operated 10 hours a day at 110 lbs. pressure. Under such full loads, the 100-150 rpm slower speed of Jaeger compressors saves fuel and wear and tear on engines every day you work.



3 COST-SAVING IDEAS ON ONE JOB: This job, by Rambore, Inc., drilling specialists, was 280,000 cu. yds. of rock, mostly granite, in depths to 40′, on Massachusetts' Southeast Expressway. One of their good ideas was to hook up their drills and compressors through 1500′ of easily portable 5″ aluminum pipe. This saved frequent moving of compressors over rough terrain. Secondly, they used 4″ drills with 12-edged bits made to their special design for hard rock. Their third good idea was to power these 7 drills with 3 Jaeger Model 600 compressors, which deliver the same air at 1650 rpm that others produce at 1800 rpm, at a very substantial saving in fuel.

Using the same engine, Jaeger gives you 600 cfm of air at 150 rpm slower speed

You buy few items of equipment in which the superiority is so easily measured as in a Jaeger rotary compressor. For example: There are six 600 cfm rotary compressors on the market powered with the same GM 6-71 diesel engine. Five of these operate at 1800 rpm to produce rated volume. The sixth, the Jaeger, delivers the same volume at only 1650 rpm.

In one 8-hour shift this difference amounts to miles less engine piston travel, as much as 72,000 fewer compressor revolutions and a substantial saving of fuel. Jaeger 125, 250 and 365 cfm units, with 1700 rpm full load speed, are comparably efficient.

This explains why Jaeger users enjoy such low engine maintenance costs, and why many Jaeger rotaries have logged more than 8000 hours without a single vane replacement. Ask your Jaeger distributor for full data and demonstration . . . or send for Catalog.

THE JAEGER MACHINE COMPANY

200 Dublin Avenue, Columbus 16, Ohio

Jaeger Machine Company of Canada, Ltd., St. Thomas, Ontario

(Continued from page 143)

sq. ft. factory, $2,000,000. Dalton & Dalton, The Arcade, Cleveland, Zone 14, archts. CD 8/14.

HEAVY CONSTRUCTION—LB & CA

Vest & Bartell, 1953 Losantiville St., Cincinnati, O. LB $251,161 (4 bidders) Section 1, Muddy Creek Interceptor Sewer, East Branch, CINCINNATI, O. City, City Hall, Cincinnati, O. Bids Aug. 26. CD 8/21.

Del Constr. Co., 25417 Bryden Rd., Cleveland 22, O. and **Fairview Park Excavating Co.**, 27265 Bagley Rd., Olmsted Falls, O. CA $591,732, est. $733,000, main trunk sewer, MANSFIELD, O. City, City Hall, Mansfield, O. Floyd G. Browne & Assocs., 125 W. Church St., Marion, O., engrs. CD 8/29/57.

▲ **INDIANA**—State Hy. Comn., John Peters, chn., State House Annex, Indianapolis, Zone 4,

Ind.—**J. C. O'Connor & Sons**, 2104 Miner St., Fort Wayne, Ind., CA $2,290,976, rein.-con. pavement, Contr. R-4424, F-77 (23, 24, 24), Starke Co.;

Ind.—**The Hunt Paving**, 2450 S. Tibbs Ave., Indianapolis, Ind., CA $1,870,253, rein.-con. pavement Contr. R-4405, F-616 (6), Union and Wayne Counties;

Ind.—**Olinger Constr.**, Huntingburg, Ind., CA $973,631, bit. pavement with macadam base, Contr. R-4432, S-851 (1, 2), Perry Co. Grand total $5,134,860. Bids June 25. CD 7/2, under LB.

▲ **Witter Gaddis Corp.**, P.O. Box 457, Schererville, Ind., LB $1,253,000, Div. B-1, filtration plant exp., pumping stations and appurts.; LB $110,672, Div. A-2, underground intake and appurts., MICHIGAN CITY, IND., City, City Hall, Michigan City, Ind. Bids Aug. 26. CD 7/30;

Haynes & Haynes Constr. Co., Elkhart, Ind., LB $1,291,841, Div. A-3, A-4, A-5, water main, ext., (Michigan City, Ind.);

Luedtke Eng. Co., Frankfort, Mich., LB $413,123, Div. A-1, subaqueous intake harbor crossing and appurts., (Michigan City, Ind.).

▲ **Contracting & Material Co.**; 1235 Dodge St., Evanston, Ill. and **Kenny Constr. Co.**, 3220 Oakton St., Skokie, Ill. CA $735,307, grade separation, 95 St. and South Expressway; CA $558,206, grade separation, 87th St. and South Expressway; CA $578,856, grade separation, 79 St. and South Expressway, CHICAGO, ILL. Bd. Comrs. Cook Co., County Bldg., Chicago 2, Ill. Grand total $1,872,369. Awarded Sept. 2. CD 8/19, under LB.

Cook Co., County Bldg., Chicago, Ill., rejected bids Aug. 12, Congress St. Expressway relocating Aurora and Elgin tracks, CHICAGO, ILL. LB $263,520. CD 8/21, under LB.

Jos. J. Duffy & Co., 4994 N. Elston Ave., Chicago, Ill., LB $524,702 (10 bidders) install 2, 67 ft. 3 in. x 164 ft. 2 in. and 53 ft. 6 in. x 67 ft. 3 in. pools related facilities, Portage Park, CHICAGO, ILL. Chicago Park Dist., 425 E. 14 St., Chicago 5, Ill. Bids Aug. 29. CD 8/12.

E. H. Marhoefer Jr. & Co., 2424 25th Ave., Franklin Park, Ill. LB $383,279 (6 bidders) install equipment in Fulton St. Pumping Station, Congress Expressway and Des Plaines St., CHICAGO, ILL. Dpt. Purchases, City of Chicago, City Hall, Chicago 2, Ill. Bids Aug. 28. CD 8/12.

R. J. McNichols, 212 S. East Ave., Oak Park, Ill. LB $107,731 sewer (combined) system 55 St. between Dorchester and Harper Sts., CHICAGO, ILL. Chicago Land Clearance Comn., 320 N. Clark St. Chicago 11, Ill. Consoer, Townsend & Assoc., 360 E. Grand Ave., Chicago 11, Ill., engrs.

Paolo Salce & Co., 7940 W. Brand Ave., Elmwood Park, Ill. LB $477,096, 39,241 lin. ft. comb. curbs and gutters and 39,875 lin. ft. all concrete sidewalks at various locations, CHICAGO, ILL. City, City Hall, Chicago 2, Ill. Bids Aug. 28. CD 1/2/57.

Premier Elec. Constr. Co., 155 W. Hubbard St., Chicago, Ill. CA $150,000. installing 30 Strobe lighting units and 60 ft. poles, Chicago Midway Airport, 6200 S. Cicero Ave., CHICAGO, ILL. City, City Hall, Chicago 2, Ill. CD 9/28/56.

Marion Clesson, 235 E. Main St., Decatur, Ill. LB $122,622, water distr. sys. addn., MONTICELLO, ILL. City of Monticello, City Hall, Monticello, Ill. Engineering Service Corp., Decatur Club Bldg., Decatur, Ill., engrs.

Chas. G. Ind, Point Ave., Rockford, Ill., LB $80,366 concrete curb and gutter at 6 and Jefferson Sts., clearing, sidewalk removal, concrete paving curb and gutters, ROCKFORD, ILL. City of Rockford, City Hall, Rockford, Ill. Anthony C. Kanz, City Hall, Rockford, Ill., city engr. Awarded Aug. 28.

▲ **WISCONSIN-MINNESOTA**—State Hy. Dpt., 1246 University Ave., St. Paul, Minn.,

Wis.-Minn.—**Industrial Constr. Co.**, 9216 Grand Ave., Minneapolis, Minn. CA $589,734, Bridge No. 9102 (Wis. Bridge No. B 47-23) over Wisconsin Channel of Mississippi River, 1.3 mi. N. of Red Wing, Minn. Goodhue Co., Minn.;

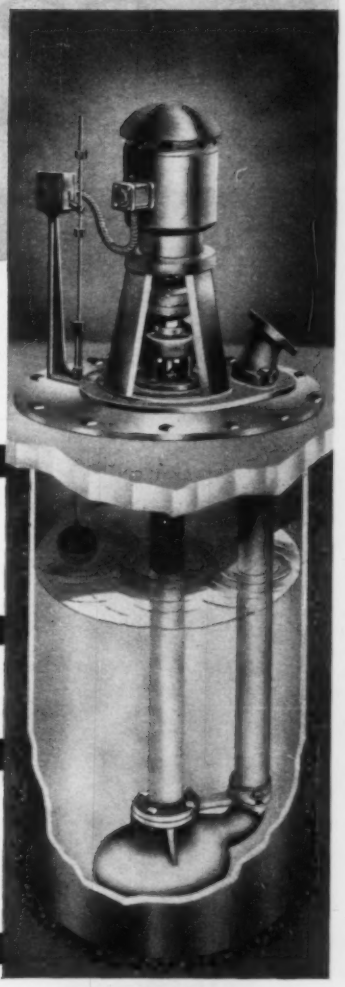
Wis.Minn.—**La Crosse Dredging Co.**, 140 South Dearborn St., Chicago, Ill. CA $565,911, grade, 1.2 mi. between North End of Bridge No. 9040 over main channel of Mississippi River at Red Wing and 200 ft. N. of Bridge No. 9102 over Wisconsin Channel of Mississippi River near Hager City, Wis. 818,356 cu. yd. embankment materials, etc., Goodhue Co., Minn. Bids Aug. 22. CD 8/26, under LB.

▲ **WISCONSIN**—State Hy. Comn., State Office Bldg., Madison,

Wis.—**R. W. Constr. Co. & Badger State Constr. Co.**, 3140 W. Fond du Lac Ave., Milwaukee 10, Wis., CA $1,459,967, base, concrete pavement and structures B-51-31, 32 and 33, 2.599 mi. Illinois State Line-Milwaukee County Line (C.T.H. G-Milwaukee County Line Section) Road, IH 94, Contr. 1, Proj. I-94-6

SCREENLESS PUMPS for

SEWAGE PUMPING
DRAINAGE PUMPING
with a REAL NON-CLOG IMPELLER



This HEAVY DUTY Sewage and Sump Pump with the famous NON-CLOG Impeller, effectively handles large diameter solids, rags and stringy material which are washed into the sewage pit.

RUGGEDLY BUILT

This factory assembled unit has an ample reserve of strength to meet the most severe conditions and to furnish years of trouble-free operation.

SIMPLIFIED INSTALLATION

Only one piping connection required. Only one electrical connection. An ECONOMICAL installation.

CAPACITIES

A large selection of units to meet every need. Capacities to 1500 GPM; heads to 86 feet; can be supplied with 1750 RPM, 1140 RPM or 870 RPM motors; four and five inch discharges.

NON-CLOG IMPELLER

The NON-CLOG Impeller built into this Screenless Sewage Pump supplies the ideal method of pumping sewage of other unscreened liquids containing solids. This design eliminates the necessity for expensive pneumatic ejectors and various other pumps requiring screening devices.

Successfully handles the tough jobs where other pumps fail.

Pumps of this design are still operating satisfactorily after 25 years in service.

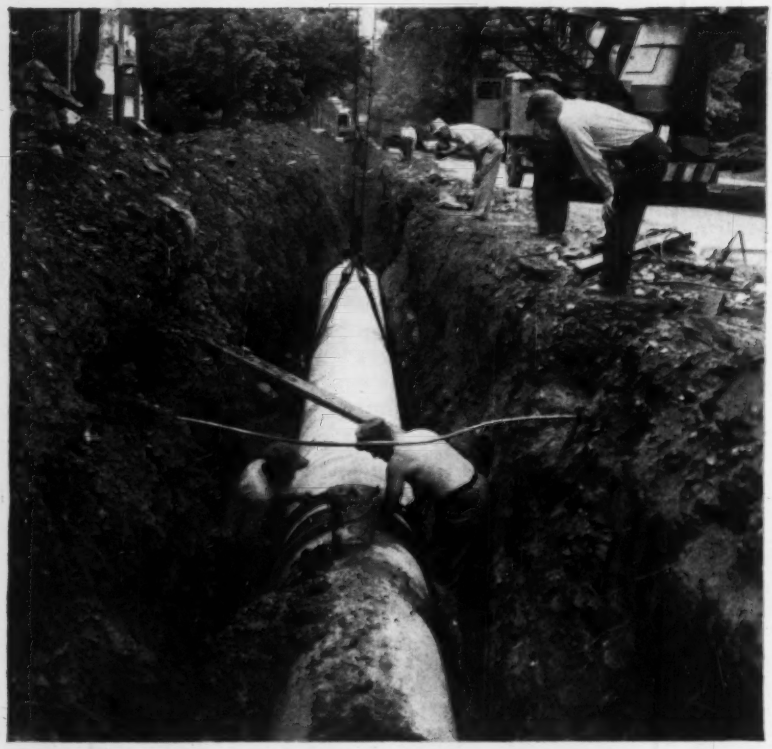
Send for Bulletin C-900 or refer to **weil** catalog in Sweet's 1958 or Domestic Engineering Catalog Directory. Weil Representatives and Weil Engineers are available to help solve your waste pumping problems.

weil PUMP COMPANY

1528 North Fremont St. • Chicago 22, Ill.

Costs go down

as fast as the pipe!



Lancaster, Pennsylvania: Ten miles of 42-inch ID steel main are an important addition to the local water supply system. The 100 per cent Dresser-Coupled line was laid by Frank Kukurin & Sons and Alconn Utilities.

AND DRESSER-COUPLED steel pipe goes in fast! Steel pipe in lengths up to 50-feet needs fewer connections, and Dresser® Couplings make those connections fast... two man-minutes per bolt. Steel pipe is lighter... saves freight costs and provides easier handling at the job-site. When you use Dresser-Couplings to join steel pipe, you eliminate the need for expensive, specialized joining equipment. The only tool you need is a simple hand wrench. For *least initial cost* and *lowest maintenance* on your next water line, specify Dresser-Coupled steel pipe.

Two man-minutes per bolt for permanent, leak-proof joints!

Bradford, Pennsylvania
Chicago
Houston
Philadelphia
New York
S. San Francisco
Toronto & Calgary

DRESSER
MANUFACTURING DIVISION

ONE OF THE DRESSER INDUSTRIES

(10) 323, Racine Co.; CA $1,084,242, base, concrete pavement and Structures B-51-29 and 30, 2.165 mi. Illinois State Line-Milwaukee Co. Line (Thompsonville-C.T.H. 2G, Section) Road, IH 94, Contr. 1, Proj. I-94-6 (9) 326, Racine Co. Bids Aug. 26; Wis.—**Boulanger Constr. Co.**, Casco, Wis., CA $1,618,301, base, concrete pavement and Structures B-17-14 and 34, 6.391 mi. South County Line-Oshkosh (S.T.H. 26-S.T.H. 21 Section) Road, U. S. Hy. 41, Contr. 1, Proj. F 03-2 (42), Winnebago Co. Grand total $4,162,510. CD 8/29, under LB.

The Drumi Co., 1788 N. Water St., Milwaukee, Wis. LB $777,000, (14 bidders), Hawley Road Viaduct, MILWAUKEE, WIS. City, City Hall, Milwaukee, Wis. Bids Sept. 3. CD 8/4.

▲† **J. A. Utley Co.**, 3128 Lapeer, Flint, Mich., CA $1,684,745. dormitory, K. I. Sawyer Air Force Base, MARQUETTE, MICH. U. S. Eng., 1101 Washington Blvd., Detroit, Mich. CD 9/9.

▲† **T. E. Perron Constr. Co.**, 6525 Lincoln St., Detroit, Mich., CA $1,387,600, dormitory, Wurtsmith Air Force Base, OSCODA, MICH. U. S. Eng., 600 E. Jefferson St., Detroit, Mich. CD 9/9.

† **A. J. Etkin Constr. Co.**, Oak Park, Mich., CA $378,807, Airmens Dining Hall and utilities, Wurtsmith Air Force Base, ENG-20-064-58-74, OSCODA, MICH. U. S. Eng., 1101 Washington Blvd., Detroit, Mich. Bids Aug. 15. (Correction—Contractor's name). CD 8/29, under LB.

BUILDINGS—LB & CA

Ernest Alessio Constr. Co., 595 E. Tallmadge St., Akron, O., CA $745,287. general contract DETENTION HOME and JUVENILE COURT, 9-acre site, 650 Dan St., AKRON, O., Comrs. Summit Co., Court House, Akron, O. Bids June 24. CD 7/8, under LB.

Steinle-Wolfe Constr. Co., 128 N. Jefferson St., Fremont, O., CA $840,000 WAREHOUSE, at lamp works plant, BUCYRUS, O. General Electric Co., 1 River Rd., Schenectady, N. Y. Awarded Aug. 13. CD 7/10.

▲ **Hyman Kaplan & Son**, 4095 Warrensville Center Rd., Cleveland 22, O. CA Est. approx. $1,500,000, SHOPPING CENTER, Bell St., CHAGRIN FALLS, O. Claude H. Whipple, 4095 Warrensville Center Rd., Cleveland 22, O. CD 10/9.

▲ **C. V. Perry & Co.**, 40 W. Gay St., Columbus, O. Owner builds, $7,000,000, 307 HOMES, in Maize Rd. Subdivision, Morse and Maize Rds., COLUMBUS, O.

▲ **Knowlton Constr. Co.**, 1133 W. Columbus St., Bellefontaine, O., CA $1,190,700, general contract 5 story 162-bed, CHILDREN'S HOSPITAL addn., COLUMBUS, O. Franklin County Hospital Comn., Court House, Columbus, O. Bids Aug. 19. CD 7/23; **Piping Contractors Co.**, 58 N. Washington Ave., Columbus, O., CA $686,200, plumbing, heating and ventilating contract for Children's Hospital addn. (Columbus, O.).

▲ **Feiner Homes, Inc.**, 18302 Harvard Ave., Cleveland 22, O. Own Forces. $5,000,000, 150 HOMES Gates Mills Blvd., MAYFIELD HEIGHTS, O. Will be built over 2 to 3 yr. period. Marvin Rukin, 13947 Cedar Rd., Cleveland 18, O., archt. CD 5/27.

▲ **Gates Mills—SOM Center Co.**, 2199 Green Rd., Cleveland 21, O. Own Forces. $5,000,000, 150 HOMES Gates Mills Blvd., MAYFIELD HEIGHTS, O. Will be built over 2 to 3 yr. period. Marvin Rukin, 13947 Cedar Rd., Cleveland 18, O., archt. CD 5/27, under Feiner Homes, as owner.

▲ **Geo. V. Jerutis & Assocs.**, 6161 W. Archer Ave., Chicago, Ill. Own Forces. $2,500,000, 40 APARTMENT BLDGS., Harlem Ave. between 16 and 22 Sts., BERWYN, ILL. M. J. McCarthy, 2701 W. 79 St., Chicago, Ill., archt.

Bates Constr. Co., 105 S. LaSalle St., Chicago, Ill., CA $100,000, 8,000 sq. ft. WAREHOUSE AND OFFICE BLDG., 4951 W. Harrison St., CHICAGO, ILL. The L. S. Starrett Co., 11 N. Jefferson St., Chicago, Ill.

Inland Constr. Co., Inc., 6132 Oakton St., Horton Grove, Ill., CA $750,000, 1 story, 265x361 ft., brick SHOPPING CENTER, 1500-70 E. 55 St., CHICAGO, ILL. New Hyde Park, Inc., c/o Webb & Knapp, Inc., 104 S. Michigan Ave., Chicago, Ill. Harry Weese & Assocs., 104 S. Michigan St., Chicago 3, Ill., archts.

▲ **Matela & Boyle**, 8583 S. Chicago Ave., Chicago, Ill., Own Forces $3,000,000, 115 HOMES, 81 and 93 Sts., Bennett & Sonstance Aves., CHICAGO, ILL. J. E. Hosek, 7439 Cottage Grove, and H. E. Anderson, 7915 S. State St., Chicago, Ill., archts.

Poirot Constr. Co., 2001 W. Pershing Rd., Chicago, Ill., CA $300,000, 1 story, 43,260 sq. ft. FACTORY and OFFICE BLDG., 3900 S. Karlov Ave., CHICAGO, ILL. Time Chemical, Inc., 4350 S. Wolcott Ave., Chicago, Ill. Bids Aug. 6. CD 8/5.

Clearing Industrial Dist., 38 S. Dearborn St., Chicago, Ill. CA $250,000, 24,000 sq. ft. WAREHOUSE AND OFFICE BLDG., Clearing Industrial District's Franklin Park-Manheim Development, FRANKLIN PARK, ILL. Triangle Conduit & Cable Co., Inc., 344 N. Canal St., Chicago, Ill.

George J. Miller, Renehan Rd., Grayslake, Ill., CA $180,000, 18,000 sq. ft. PLANT addn., GRAYSLAKE, ILL. Grayslake Gelatin Co., Railroad Ave., Grayslake, Ill. Hal Chalmers & Assocs., 220 N. Lake St., Grayslake, Ill., archts.

Klefstad Engineering Co., 4444 W. Montrose Ave., Chicago, Ill., CA $110,000, 10,000 sq. ft. PLANT addn. HARWOOD HEIGHTS, ILL. Matherson-Selig Co., 7301 W. Wilson Ave., Harwood Heights, Ill.

Poirot Constr. Co., 2001 W. Pershing Rd., Chicago, Ill., CA $150,000, 16,000 sq. ft. PLANT addn., HOMEWOOD, ILL. Richard D. Irwin, Inc., 1818 Ridge Rd.,

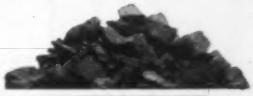
(Continued on page 148)

Name Your "Hard to Coat" Aggregate

CALIFORNIA
MARBLE CHIPS

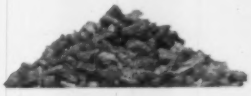
OHIO
REFERENCE GRAVEL

MARYLAND
REFERENCE GRAVEL



PENNSYLVANIA
REFERENCE STONE

MASSACHUSETTS
RHYOLITE



OREGON
CRYSTAL SILICA

NEW *CATIONIC* BITUMULS

- **Treats Most Aggregate... Especially "Treacherous" Types Such As Shown Here**
- **Protects Your Cold-Mix Pavements and Surface Treatments Against Early Rains**

CATIONIC Bitumuls,® our new, cold-applied asphalt emulsion, is a truly versatile binder with a "native" affinity for all aggregate, even damp, slick, "hard to coat" gravel and other hydrophilic stone. It also sets more rapidly than conventional road emulsions.

This combination of properties offers definite advantages to the Roadbuilder:

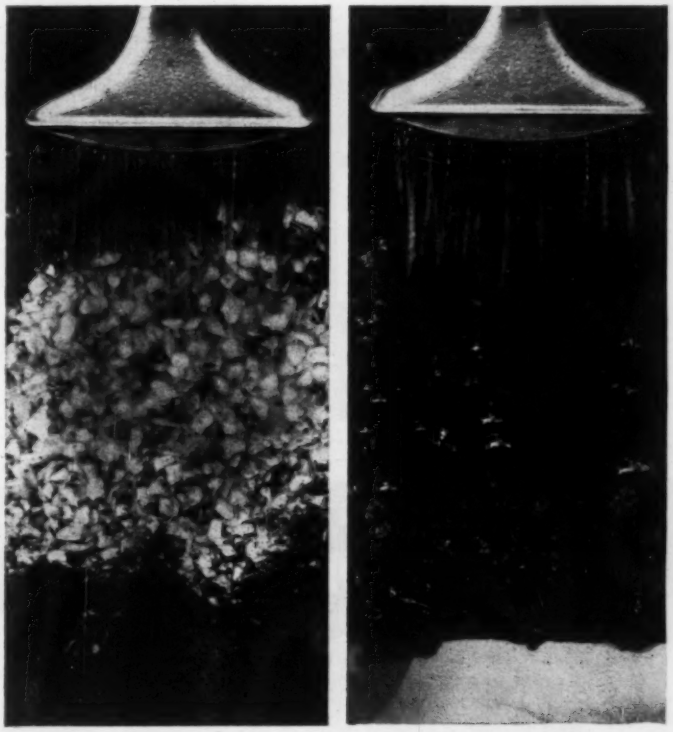
Wider selection in the use of local, often lower-cost, aggregates.

Extended working season . . . better protection against sudden showers.

Faster set permits early rolling of coarse aggregate mixes, and fast opening of pavement to traffic.

Storage, handling and application are much the same with **CATIONIC** Bitumuls as with conventional emulsions; however, care must be exercised in the preparation of storage facilities and application equipment.

CATIONIC Bitumuls is available from certain of our strategically located plants. Our engineers are ready to discuss projects which you may wish to set up for trials of this new product with specific types of aggregate.



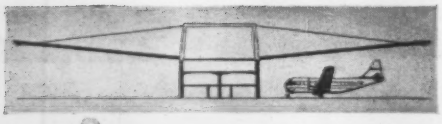
Proof... the superior coating and holding properties of new **CATIONIC** Bitumuls are clearly demonstrated in this test. Note the almost-complete wash-out of the conventional road binder (left); while **CATIONIC** Bitumuls (right) firmly holds the crystal-silica chips used for these test mix samples.

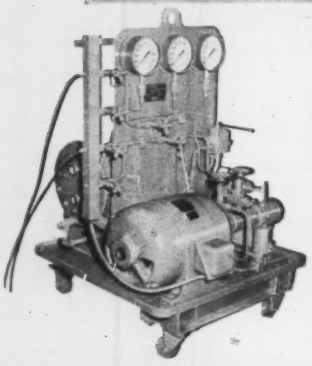
American Bitumuls & Asphalt Company

320 Market, San Francisco 20, Calif. Perth Amboy, N. J.

Baltimore 3, Md. St. Louis 17, Mo. Cincinnati 38, Ohio
Mobile, Ala. San Juan 23, P. R. Tucson, Ariz.
Inglewood, Calif. Oakland 1, Calif. Portland 8, Ore.

HYDRAULIC JACKS AND PUMPS FOR ANY PRESTRESS JOB





The Corbetta Construction Company used our center hole rams and hydraulic pumps to meet the challenge of cantilever design in the new Pan American World Airways terminal at New York's International Airport.

Our complete line of hydraulic equipment is competitively priced and designed to meet your specific application on any prestress job. Your inquiry is invited.

INTERCONTINENTAL EQUIPMENT CO., INC.

Prestressed Concrete Division
120 Broadway, New York 5, N. Y.

ASSOCIATE MEMBER PCI

GUNITE
Since 1915
CONCRETE
SAND AND CEMENT
"Placed by Air"

GUNITE
BLO-CRETE WET-CRETE
LINING, ENCASING, FIREPROOFING, REPAIRING

Send for our new bulletin No. 20 of actual photographs, information and detailed specifications.

GUNITE CONCRETE & CONST. CO.
1301 WOODSWETHER RD., KANSAS CITY 5, MO.
2016 W. Walnut St., Chicago 12, Ill.
1004 Market St., St. Louis 1, Mo.
3206 Houston Ave., Houston 9, Texas
1136 W. Orangethorpe, Fullerton, Calif.
Milwaukee—Twin Cities—Denver—New Orleans

FOUNDATION CONSTRUCTION BY

McKINNEY

DRILLING CO.
BOX 190—LOGAN 4-8373
NACOGDOCHES, TEXAS

CAISSONS
DRILLED & UNDERREAMED
PIERS

WIRE OR PHONE FOR A QUOTATION ON YOUR NEXT FOUNDATION JOB
ANYWHERE IN THE WORLD
OFFICES IN
ATLANTA, GA. • PITTSBURGH, PA.
WASHINGTON, D. C. • CLEVELAND, OHIO

THE ONLY PRODUCT CAPABLE OF WELDING MASONRY MATERIALS

PERMAGILE

WILL PERMANENTLY JOIN, FILL, CLAD, OR SURFACE CONCRETE AND ALL MASONRY

℞ for MODERN and EFFECTIVE MAINTENANCE

WRITE FOR FULL DETAILS TODAY!

PERMAGILE
WELDS MASONRY MATERIALS

PERMAGILE CORP. OF AMERICA
34-43 Fifty-sixth St., Woodside 77, N. Y.

(Continued from page 146)

Homewood, Ill. John D. Jarvis, 185 N. Wabash Ave., Chicago, Ill., archt.

J. Emil Anderson & Son, 1809 Balmoral Ave., Chicago, Ill., CA $120,000, 10,000 sq. ft. PLANT, James Place, Anderson Industrial Dist., MELROSE PARK, ILL. Consolidated General Products, Inc., 2401 Nicholson St., Houston, Tex.

▲ R. E. Anderson, 105 Hickory Ave., North Aurora, Ill. Own Forces. $1,200,000, 70 HOMES, Butterfield Rd., NORTH AURORA, ILL.

▲ Kenorthy Co., 8359 S. Pulaski Rd., Chicago, Ill. Own Forces, $4,750,000, 200 HOMES, 159 and Central Sts., OAK FOREST, ILL.

Ahern Builders, c/o owner, CA $800,000, 40 HOMES, 99 Pl., east of Central Ave., OAK LAWN, ILL. District Savings & Loan Assn., 3430 S. Halstad St., Chicago, Ill.

▲ Dwellings, Inc., 514 Locust St., Wilmette, Ill. Own Forces. $1,800,000. 70 HOMES, Laurel Lane, Greenleaf, WILMETTE, ILL.

▲ D. Gauser & Assocs., 9203 W. Blue Mound Rd., Milwaukee, Wis., CA $1,249,431, general contract married students APARTMENT, MADISON, WIS. Wisconsin University Bldg. Corp., Madison, Wis. Bids Aug. '14. CD 8/26, under LB;
J. P. Cullen & Son, 130 E. Eastern Ave., Box 72, Janesville, Wis., CA $533,000, 100 UNITS Madison, Wis.).

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

† Colo., Colorado Springs—BA 9/23—Dpt. Air Force, Box 1670, irrigation and topsoiling Cadet Academic Area (IFB) 05-613-59-4, Air Force Academy. Skidmore, Owings & Merrill, 3333 N. El Paso St., engrs.

† Nebraska—BA 9/23—U. S. Eng., 1709 Jackson St., Omaha, Zone 2, constr. agricultural levee Unit R 520, Rulo, in Richardson Co., ENG-25-066-59-14. $500,000-$600,000.

† Colo., Denver—BA 9/25—U. S. Eng., 1709 Jackson, Neb. constr. access road, Lowery Range, Lowry Air Force Base, ENG-25-066-59-19. $550,000-$650,000. CD 9/11/51.

† Minn., Grand Rapids—RECEIVER, BLDG. etc.—BA About 9/26—U. S. Eng., 1217 U. S. Post Office & Custom House, St. Paul 1, receiver bldg. and addn. to transmitter bldg. at Air Force Station, ENG-21-018-59-6.

† Okla., Fort Sill—WATER TANK—BA 10/1—U. S. Eng., Box 61, Tulsa, constr. appurtenances for an elevated water tank. $100,000. CD 9/8.

† Nebraska and Iowa—BA 10/2—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., pilot canal excav. Missouri River "Sioux City to Omaha" at Sandy Point-Tysons Bends vicinity of Blair, Washington Co., ENG-25-066-59-21. $340,000-$400,000.

Tex., Arlington—BA 10/2—City, City Hall, Contr. N, water purification plant addn. $400,000. Plans deposit $25. Freese & Nichols, 407 Danciger Bldg., Fort Worth, engrs. CD 8/12.

Mo., St. Louis—BA 10/7—City, Bd. P. Service, 304 City Hall, Zone 3, mortar lining 29,175 ft. 36 in. water mains from Bissell's Point Water Works Pumping Station and Forest Park Ave. at Boyle Ave. $175,000. CD 4/25.

BUILDINGS—BA

Mo., Farmington—OUTPATIENT CLINIC, etc.—BA 9/23—State Div. P. Bldgs., Chief of Planning & Constr., 100 State Capitol, Jefferson City, (A) nurses home, chapel and recreation (B) solaria addns. to clinic and hall bldgs. and addns. to Harrison and Annex bldgs. at State Hospital No. 4. Plans deposit $50. Harris Armstrong, 108 S. Sappington Rd., Kirkwood, Zone 22, archt.

Tex., Mercedes — MOTOR-HOTEL — Bids Asked — C. P. Melton, Mercedes, motor-hotel. $350,000.

HEAVY CONSTRUCTION—LB & CA

▲ MINNESOTA—State Hy. Dpt., 1246 University Ave., St. Paul,

Minn.—S. J. Groves & Sons Co., 500 Wesley Temple Bldg., Minneapolis, Minn., CA $1,789,740, grading 7.5 mi. between 1.5 mi. southwest Grant Portage and Pigeon River, Cook Co.;

Minn.—O. W. Swanson Constr. Co., 550 South Snelling Ave., St. Paul, Minn., CA $673,128, crushed rock base, plant mixed bit. surf., concrete paving 5.4 mi. between 0.4 mi. northwest of Dakota and 2 mi. southeast Lamoille, Winona Co. Bids Aug. 22. CD 8/27, under LB.

MINNESOTA—State Hy. Dpt., 1246 University Ave., St. Paul,

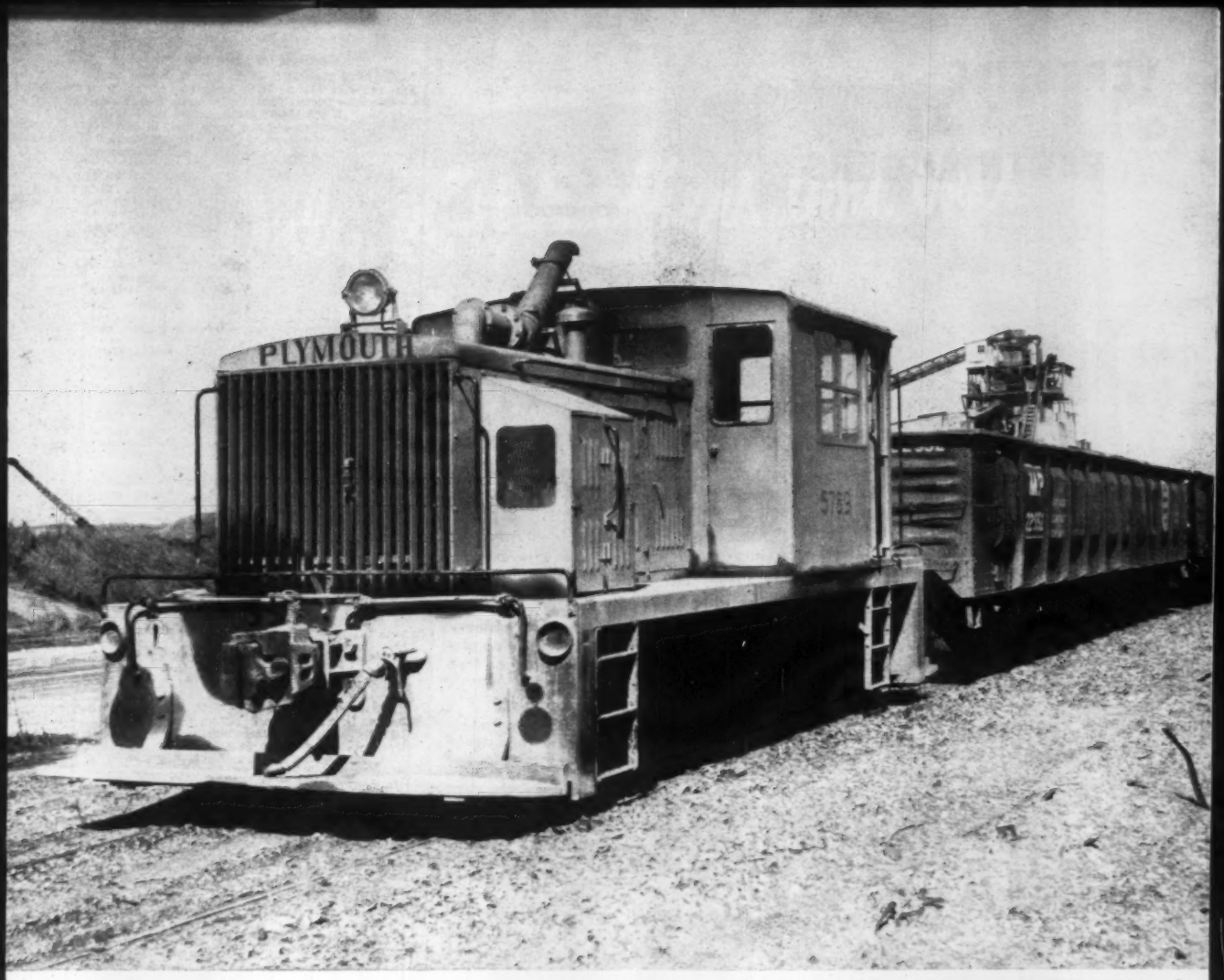
Megarry Brothes, 437-33 Ave. North, St. Cloud, Minn. CA $523,005, sand-grav. sub-base, grav. base and road-mixed bit. surf. 3.5 mi. near Eveleth, St. Louis Co. Bids Aug. 8. CD 8/13, under LB.

Cameron & Joyce, Keokuk, Iowa, CA $138,651, general contract, municipal airport imprvs., incl. all-weather 3,000 ft. runway, grading, fencing, medium intensity lighting, drainage, access road, parking area for automobiles and administration bldg., Section A, FORT MADISON, IOWA. City, Fort Madison Municipal Airport Comn., City Hall, Fort Madison, Iowa. Bids Aug. 21. CD 6/13.

MISSOURI — State Hy. Dpt., Jefferson City, Bids opened 8/28,

Mo.—List & Weatherly Constr. Co., 424 Nichols Rd., Kansas City 12, Mo., LB $212,920 (8 bidders), twin 46 ft. 2-68 ft., 52 ft. I-beam spans, Sta. 265 plus 27; LB $75,036 (8 bidders), 2-47 ft. 2-56 ft. I-beam spans, Sta. 244 plus 92; LB $140,523 (8 bidders), twin 3-50 ft. I-beam spans, Sta. 272 plus 93; LB

(Continued on page 150)



40-Ton Plymouth switches over 15,000 gondola cars per year—moves some as many as 6 times per job

Plymouth saves money from the first day

...in rugged sand and gravel loading operation

"One of the best pieces of equipment we've ever purchased," is the way Sam R. Clark, Manager of Malvern Gravel Company, Malvern, Arkansas, describes the company's 40-ton diesel-powered Plymouth Locomotive equipped with Torqomotive (hydraulic torque-converter) Drive.

"Replacing steam-powered equipment in loading sand and gravel," reports Mr. Clark, "our Plymouth Diesel has done the work of two engines—handling over 15,000 railway cars a year over a 5-mile standard-gauge track. Many jobs require multiple switching and we can easily move 50 empties and up to 40 cars loaded. Operating about 50 hours a week, our Plymouth performs faster and smoother than either steam or electric-powered equipment."

"Saved money from the first day of operation," says this user.

Plymouth shown above delivers outstanding performance, unusual economy in switching, spotting and hauling.

Plymouth gasoline and Diesel Locomotives, from 3 to 80 tons, can increase production and reduce your operating costs.

Send us a brief outline of your operation; we'll send you a recommendation promptly. Address: Plymouth Locomotive Works, The Fate-Root-Heath Company, Department A-4, Plymouth, Ohio.

RAIL POWER

PLYMOUTH® LOCOMOTIVES

WITH TORQOMOTIVE DRIVE

ALSO BUILDERS OF F-R-H CERAMIC MACHINERY

PLYMOUTH LOCOMOTIVES in Progressive Industry throughout the world

VERSATILE ACKER EARTH AUGERS

aid highway program before and after construction

The Acker AP Earth Auger is the highway construction man's most versatile friend.

BEFORE CONSTRUCTION, it "doubles-in-brass" with dependable, accurate soil sampling of sub-surface conditions. This it accomplishes with large diameter or continuous flight augers. For deeper sampling, the Acker Earth Auger speedily converts into a core drill for *inexpensive shot core* or diamond core drilling.

AFTER CONSTRUCTION, it speedily digs holes for setting guard rails, highway signs, light poles, etc. Or, used as a shot core drill the Acker Earth Auger will obtain clean, unbroken highway test cores.

So, whether or not it's used *before* or *after* construction it will pay you to investigate the versatility of the Acker AP Earth Auger.

Please write for Bulletin 40ENR.

See Acker Versatility in your own office—write us about our 16mm sound motion picture in full color which will be loaned free of charge to interested parties.

ACKER DRILL CO., Inc.
P.O. BOX 830 • SCRANTON, PA.

Over 40 years of experience manufacturing a complete line of diamond and shot core drills, accessories and equipment.

QUALITY

a Reliable
JOHNSTON
Submersible
PUMP

You can't buy a better submersible pump than a Johnston — made by a company with almost 50 years experience in building the best in vertical pumps.
All enamel coated water passages, easily adjusted impellers, extra-heavy bearings, life-time lubrication, completely waterproofed cable and motor.
Completely noiseless.
Space-saving.

Johnston pumps: 4 to 30 inches; 1½ to 1000 hp.; 25 to 10,000 gpm.

Send for complete details.

JOHNSTON PUMP COMPANY
A Division of The Youngstown Sheet and Tube Co.
PASADENA CALIFORNIA

"The Quality Line Since 1909"

JOHNSTON PUMP CO.
Bin K, Pasadena, Calif.
Send complete information on submersible pumps.

Name_____

Address_____

Firm_____

(Continued from page 148)

$118,549 (8 bidders), 2-43 ft. 2-56 ft. I-beam spans, Sta. 165 plus 17, all in Buchanan Co.;

Mo.—**Interstate Constr. Corp.**, 3621 Troast Ave., Kansas City, Mo., LB $85,676 (6 bidders), 1-46 ft., 1-70 ft., 1-49 ft. continuous void slab spans, Sta. 14 plus 45; LB $107,050 (6 bidders), 1-53 ft., 3-61 ft., 1-38 ft. continuous box girder spans, Sta. 5 plus 15, both in Jackson Co.;

Mo.—**Clark Constr. Co., Inc., and St. Joseph Fuel Oil & Mfg. Co.**, 1207 South Fourth St., St. Joseph, Mo., LB $144,278 (8 bidders), twin 2-47 ft., 1-57 ft. I-beam spans, Sta. 211 plus 57, Buchanan Co. CD 8/8.

▲ MISSOURI — State Hy. Dpt., Jefferson City, Bids opened 8/28,

Mo.—**Ray & Son, Inc.**, Louisiana, Mo., LB $94,573 (12 bidders), gran. surf. 6.511 mi. Pike Co.; LB $96,122 (5 bidders), graded earth, surf. 5.694 mi., Warren Co.;

Mo.—**Clark Constr. Co., Inc. and St. Joseph Fuel Oil & Mfg. Co.**, 1207 South 4th St., St. Joseph, Mo., LB $183,354 (8 bidders); graded earth 0.545 mi.; LB $375,968 (8 bidders), graded earth 2.279 mi. both Buchanan Co.;

Mo.—**List & Weatherly Constr. Co.**, 424 Nichols Rd., Kansas City 12, Mo., LB $196,985 (8 bidders), graded earth 0.336 mi., Buchanan Co.;

Mo.—**Chappell Constr. Co., Inc.**, DeSoto, Mo., LB $83,513 (9 bidders), gran. surf. 4.74 mi., Reynolds Co.;

Mo.—**Joseph L. Pohl, Contractor**, Nevada, Mo., LB $520,596 (2 bidders), graded earth 8.826 mi., Polk Co.;

Mo.—**Standard Industries, Inc. & Consolidated Subsidiary**, 2119 East 11th St., Tulsa, Okla., LB $606,379 (3 bidders), graded earth 12.952 mi., Polk Co.;

Mo.—**J. A. Tobin Constr. Co.**, 3701 Rainbow Blvd., Kansas City, Kan., LB $189,323 (6 bidders), graded earth 0.033 mi., Jackson Co. CD 8/8.

▲† **English Electric Export & Trading Co. Ltd.**, 23 Beaver St., New York, N. Y. LB $1,450,700, main turbine, Greers Ferry Dam, ENG-03-050-1, ARKANSAS. U. S. Eng., P. O. Box 867, Little Rock, Ark. Bids 8/14. CD 7/15.

SOUTH DAKOTA—State Hy. Dpt., Pierre,

Weelborg Bros., Dell Rapids, S. D. CA $80,548, base course and bit. surf. blotter type 12.099 mi. Co. Hy. from SD 10 at Eureka to N. D. line Proj. DS 1680 (2) & S 1680 (1), McPhersen Co. Bids Aug. 27. CD 7/31.

▲ NEBRASKA—State Dpt. Rds. & Irrigation, Lincoln,

Abel Constr. Co., 1815 Y St., Lincoln, Neb. CA $1,701,866, grading, pavement 5.8 mi. Lincoln Omaha Rd. near Lincoln Proj.. I-80-9 (16) ING-80 9 (18), Lancaster Co. Bids June 26. CD 7/11, under LB.

† **Central Constr. Co.**, Box 1072, Rapid City, S. D. LB $542,707 constr. and repair dikes and revetments, Missouri River, Kenslers Bend, Neb. and Sioux City, Iowa, in vicinity of Jackson, Neb. ENG-25-066-59-10, NEBRASKA and IOWA. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids Aug. 21. CD 7/31.

OKLAHOMA—State Hy. Dpt., Capitol 5, Oklahoma City,

Johnson Constr. Co., Box 472, Edmond, Okla. CA $655,322, est. $784,450, 6.387 mi. grade, drain for 4 lane I-35 near Orlando in Logan County. CD 8/29, under LB.

OKLAHOMA—State Hy. Dpt., Capitol, Oklahoma City, Zone 5,

received no bids Aug. 19, bridge over Washita River on county road north of Verden, Krady Co.; 2 concrete, steel bridges on county road near Geary, Blaine Co. CD 8/8.

▲† **Eldridge Constr. Co.**, 21½ W. Broadway, Enid, Okla. LB $1,615,619, est. $1,915,765 (15 bidders) four airmen's dormitories, ENG-34-066-59-5, dining hall, ENG-34-066-59-6, Tinker Air Force Base, OKLAHOMA CITY, OKLA. U. S. Eng., P. O. Box 61, Tulsa, Okla. Bids Aug. 28. CD 8/4.

Imperial Paving Co., 700 E. Grand Ave., Oklahoma City, Okla., LB $110,985 est. $121,288, grade, drain and asph. pavement 1.25 mi. Pennsylvania Ave. from Wilshire to Britton Rd., OKLAHOMA CITY, OKLA. City of Oklahoma City, City Hall, Oklahoma City, Okla. W. M. Dale, Court House, Oklahoma City, Okla., engr. CD 7/27/55.

† **Tecon Constr. Co.**, Davis Bldg., Dallas, Tex., CA $819,994, paving and approaches at Air National Guard Armory, ENG-34-066-58-84, TULSA, OKLA. U. S. Eng., P. O. Box 61, Tulsa, Okla. Bids June 30. CD 7/11, under LB.

Lee Engineering & Constr. Co., DuPont, Ga. LB $171,343, est. $200,000. 219 mi. 3-county rural pole telephone lines, Foresville in Wilson Karnes and DeWitt Counties, TEXAS. Bids Aug. 21. CD 8/6.

Sheppard-Geiger Constr. Co., 5416 Hy. 9, Corpus Christi, Tex. CA $285,000. 23 mi. 20 in. gas line Campbellton in Karnes and Atascosa Counties, TEXAS. United Gas Pipeline Co., Alamo National Bldg., San Antonio, Tex. CD 7/31/50.

▲† **Standard Dredging Corp.**, 320 Cotton Exchange Bldg., Galveston, Tex. CA $1,489,092, dredging Brownsville channel, Brazos Island Harbor, Cameron Co., ENG-41-243-59-6, TEXAS. U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex. Bids Aug. 19. CD 8/6.

† **U. S. Eng.**, 100 W. Vickery St., Fort Worth, Tex. cancelled bids to have been opened Sept. 17, NIKE Hercules Missile Facilities, Alvarado, Denton, Mineral Wells and Terrell Sites, Dallas-Fort Worth Defense areas, ENG-41-443-59-5, TEXAS. CD 8/28.

J. W. Cooper Constr. Co., Box 3947, Odessa, Tex. LB $649,700 (Base Bid) football stadium, ABILENE, TEX. Abilene Ind. School Dist., Abilene, Tex. Bids Aug. 21. CD 7/31.

McKown & Sons, Box 785, Austin, Tex. LB $97,886, Contr. 58-A 31, 33 blocks assessment asphalt street paving, LB $93,274, Contr. 58-A-30, 36 blocks assess-

(Continued on page 152)

Only K&M offers you this full line of Quality Asbestos-Cement board!

A

B

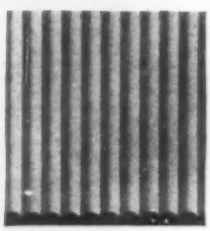
C

FLAT SHEETS

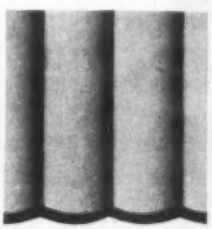
A—*Sheetflextos*—for residential and commercial exterior use. For noncombustible linings, paneling, and ceilings.

B—*LINABESTOS*—for interior and exterior use in farm buildings, homes, garages, and stores.

C—"K&M" *APAC BOARD*—for long-lasting protection at low cost. A general utility board which makes excellent covering.



A

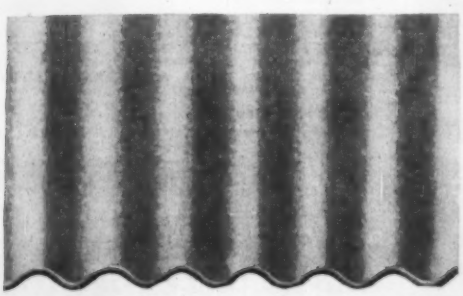


B

DECORATIVE PANELS

A—*Ribbed*—for interiors . . . dados, wainscoting, friezes, contrasting panels, and marginal strips.

B—*Fluted*—for indoor and outdoor use, alone or with plain sheets for contrast. For exterior facades, soffits, mullions, and friezes.



LIGHTWEIGHT CORRUGATED ASBESTOS

—for roofing and siding over wood-frame construction. It offers both structural and decorative characteristics.

LOW INITIAL COST

EASY TO APPLY

NO MAINTENANCE

WON'T RUST, ROT, OR CORRODE

FIRE- AND WEATHER-RESISTANT

VERMIN-PROOF

NO PROTECTIVE PAINTING REQUIRED

HANDSOME STONE GRAY APPEARANCE

This complete "K&M" line creates new business opportunities for you, because you can offer every type of client a low-cost quality material for both indoor and outdoor use. You give them year-after-year savings in maintenance man-hours and costs. Plus lifetime durability and handsome appearance.

Write to us today for more information.

K·M
BEST IN ASBESTOS

KEASBEY & MATTISON
COMPANY • AMBLER • PENNSYLVANIA

In Your Constant Search for LOWER COSTS

Are You Overlooking DOORS?

Whether seldom used or in constant action, doors can affect other plant costs in ways that may escape management's closest scrutiny.

For example, note these cost-cutting features of the door with the interlocking steel slats *(originated by Kinnear)*.

They coil above the opening! Whether opened, closed, or in action, Kinnear Rolling Doors waste no usable space anywhere.

They clear the entire doorway! When open, Kinnear Rolling Doors stay out of the way, out of reach of damage by wind or vehicles.

They save time and labor! Kinnear's coiling upward action, the key to highest operating efficiency, is also ideal for *motorized* door convenience — with push-button operation, remote switches, and other controls that meet today's trend to complete automation.

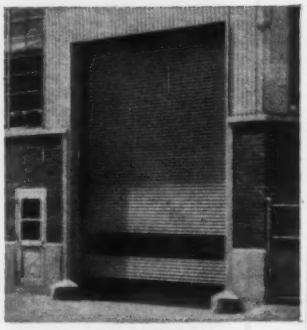
They cut heating, cooling costs. Kinnear Rolling Doors *(especially when motor operated)* promote prompt closing that cuts loss of heat in winter and cooled air in summer.

They give extra protection. Kinnear's all-metal curtain assures added protection against fire, wind, weather, vandalism.

They last longer! Records show that many Kinnear Doors have been in continuous daily use *40 years or more*.

Extra-heavy galvanizing! 1.25 ounces of pure zinc per square foot of metal, ASTM Standards, give the Kinnear curtain highest resistance to corrosion.

Built to fit any opening, with motor or manual control, Kinnear Rolling Doors assure the right answer to your needs. Write today for details!



Be sure to get the facts on

Kinnear STEEL Rolling Doors

KINNEAR ROLLING DOORS
Saving Ways in Doorways

The KINNEAR Mfg. Co. *Offices and Agents in All Principal Cities*

Factories: 1820-40 **Fields Ave., Columbus 16, Ohio; 1742 Yosemite Ave., San Francisco 24, Calif.**

(Continued from page 150)

ment asphalt street paving, AUSTIN, TEX. City, City Hall, Austin, Tex. Bids Aug. 19. CD 3/20/56.

Lee Maners, 2304 S. 1st St., Austin, Tex. LB **$116,185,** Contr. 58-A-32, 38 blocks asphalt pavement; LB **$103,090,** Contr. 58-A-33, 37 blocks asphalt pavement, AUSTIN, TEX. City, City Hall, Austin, Tex. Bids Aug. 26. CD 3/30/56.

Slovak Bros. Inc., Box 5096, Corpus Christi, Tex. CA **$108,027.** storm sewers (in S. Alameda St. and Oso Golf Course) CORPUS CHRISTI, TEX. City, City Hall, Corpus Christi, Tex. CD 8/6.

Steed Constr. Co., P. O. Box 946, Fort Worth, Tex. LB **$84,942.** constr. misc. water mains No. 31 incl. 3 sections, FORT WORTH, TEX. City, City Hall, Fort Worth, Tex. Bids Sept. 2. CD 8/11.

Steed Co., Box 964, Fort Worth, Tex. LB **$436,962** (combined bid water and sewerage sys. imprv. (sewage treatment plant, collection lines) exten. elevated water tank, water well, water lines) GRANBURY, TEX. City, City Hall, Granbury, Tex. Reaves & Gregory, 3331 W. 7th St., Fort Worth, Tex. engrs. Bids Aug. 20. CD 11/15, under Water Supply and Sewers, etc.

City, City Hall, Irving, Tex. Owner Builds. **$100,000.** emergency street repairing, imprvs., IRVING, TEX. CD 2/28/56.

City of Irving, Irving, Tex. Own Forces. **$75,000** emergency open drainage work, IRVING, TEX. CD 5/2/56.

S. G. Stockton Constr. Co., 2205 Peachtree St., Amarillo, Tex. LB **$166,312.** water sys. imprvs., PAMPA, TEX. City, City Hall, Pampa, Tex. Roberts, Merriman & Bowden, 218½ N. Russell St., Pampa, Tex. engrs. Bids Aug. 19.

Waddell Constr. Co. Box 5366, Beaumont, Tex. LB **$184,215.** Contr. 41 V-1, concrete storm sewers 25th St. with laterals, PORT ARTHUR, TEX. City, City Hall, Port Arthur, Tex. Freese, Nichols & Turner, 2111 C&I Life Bldg., Houston, Tex. engrs. Bids Aug. 20. CD 4/17/56;
M. N. Dannenbaum, Box 14496, Houston, Tex. LB **$103,181,** Contr. 41-V-2 3 pumping units (Houston Tex.)

City Water Bd., 106 W. Market St., San Antonio, Tex. Owner Builds. **$50,000.** replacing 12 in. water mains portion N. New Braunfels Ave., SAN ANTONIO, TEX. Bruce Sasse, c/o owner, ch. bd., engr. CD 8/1/57.

H. B. Zachry Co., Constr. Div., Box 10188, San Antonio, Tex., Own Forces, **$78,000** sanitary sewers, **$75,000** storm sewers, SAN ANTONIO, TEX., CD 9/2.

H. B. Zachry Co. Constr. Div., Box 10188, San Antonio, Tex., Own Forces **$45,000** water system, SAN ANTONIO, TEX. CD 8/27.

H. B. Zachry Co., Constr. Div. Box 10188 San Antonio, Tex., Own Forces **$80,000** hard-paved streets, curb, gutter, SAN ANTONIO, TEX. CD 8/27.

City, City Hall, Waco, Tex. Owner Builds. **$85,000.** general street imprvs., repairing, WACO, TEX. CD 12/18.

† **H. E. Scimmels,** Yardley, Wash. CA **$143,174** addnl. water and sewer facilities at Lake McDonald Hotel, Glacier National Park, MONTANA. National Park Service, Dpt. Interior, 19 and C Sts., Wash. D. C., Bids about Aug. 29. CD 7/19/55.

BUILDINGS—LB & CA

W. A. Klinger, Inc., 2015 E. 7 St., Sioux City, Iowa, CA **$599,350,** general contract 5 story, 60 x 150 ft. 80-bed addn. and 2 story, 24 x 66 ft. wing HOSPITAL addn., Kimball Ave. and East Ridgeway, WATERLOO, IOWA. Sholtz Memorial Hospital, Waterloo, Iowa. Bids Aug. 7. CD 8/25, under LB.

Sharp Bros. Contg. Co., 15 and Troost, Kansas City, Mo., CA **$570,410,** 3 story DORMITORY (Barracks) and 1 story KITCHEN-DINING WING, Proj. No. MO-23CH-34 (DS), LEXINGTON, MO. Wentworth Military Academy, Lexington, Mo. Arthur Kriehn, 6225 Brookside Blvd., Kansas City, Mo., archt. Bids Aug. 27. CD 4/17.

▲† **MacDonald Constr. Co.,** 1310 South Grand Ave., St. Louis 4, Mo., CA **$4,663,557,** constr. 288 unit, CAPEHART HOUSING, Second Increment, MINOT, N. D. Base Procurement Officer, Minot Air Force Base, Minot N. D. Bids June 18. CD 6/22.

FAR WEST

HEAVY CONSTRUCTION—BA

† **Arizona**—BA 10/7—Bureau Reclamation, Dpt. Interior, Yuma, deepening North Gila Drain Line No. 3 and constr. drain extension, Gila Proj. 300C-116, CD 9/4/56.

BUILDINGS—BA

Calif., Agnew—OFFICE—BA 9/30—State Div. Architecture, 1120 N. St., Sacramento, 2 story, about 35,000 sq. ft. floor area office bldg. for newly established east area branch of Agnews State Hospital Dpt. Mental Hygiene, W.O. 4407GC-6 $712,000. Plans deposit $50. CD 1/7.

BUILDINGS—SLC

▲ **Calif., Sacramento**—BANK—Bank of America, National Trust & Savings Assn., 300 Montgomery St., San Francisco, soon lets contract 3 story, bsmnt., Type I constr., 88x227 ft. main bank between 7th and 8th Sts., incl. 160x320 ft. parking lot. $2,300,000. Wurster, Bernardi & Emmons, 202 Green St., San Francisco, archts. CD 8/13.

HEAVY CONSTRUCTION—LB & CA

IDAHO—State Hy. Dpt., Boise,
Carl E. Nelson, Logan, Utah, CA **$583,862,** constr. roadway, drainage structures and plant mix. bit. surf.

(Continued on page 154)

A "Subway" For Natural Gas Is Constructed In The Dry 20 Feet Below The Rio Grande

To insure a continuous flow of gas and to provide for increased capacity, two pipelines, 25′ apart, were installed in the ditch shown.

Owner: Texas Eastern Transmission Corp., Shreveport, Louisiana

Contractor: H. B. Zachry Company, San Antonio, Texas

For the first time in history, natural gas from Mexico travels to the United States through two 20-inch pipelines buried deep below the bed of the Rio Grande near Hidalgo, Texas.

To construct this unusual river crossing, the river was first diverted and a by-pass built around the construction site. MORETRENCH WELL-POINT EQUIPMENT, installed in successive stages, dried out the 400′ wide river bed. This permitted the contractor to excavate the dry material in nearly vertical cuts, effecting a considerable saving in this instance over the dredging method of river crossing. Draglines, working some 20-30 feet below normal water level, were used exclusively on construction across the river bed.

To dewater a project like this successfully requires expert knowledge and superior pumping equipment. Moretrench has both — at your disposal — for use on any wet job, large or small. Call us!

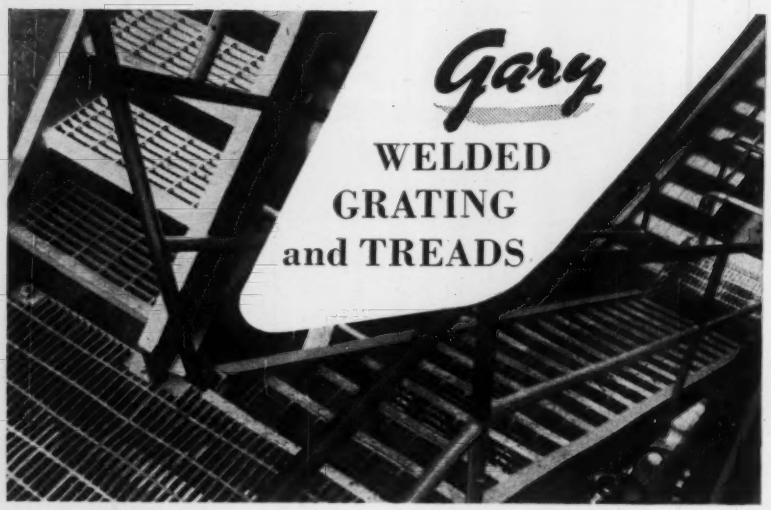
MORETRENCH CORPORATION

90 West St.	4900 S. Austin Ave.	7701 Interbay Blvd.	315 W. 25th St.	Rockaway
New York 6	Chicago 38, Illinois	Tampa 9, Florida	Houston 8, Texas	New Jersey
CO 7-2283	Portsmouth 7-4212	Tampa 61-1881	Underwood 4-7774	Rockaway 9-2100

Western Representative: Andrews Machinery of Washington, Inc., Seattle 4, Washington

Canadian Representative: Geo. W. CROTHERS Limited, Toronto, Ontario

Brazilian Representative: Oscar Taves & Co., Ltd., Rio de Janeiro



Gary

WELDED GRATING and TREADS

Get all the facts. Write for Bulletin

- ▶ TAILOR MADE—for most economical installation.
- ▶ RIGID STRENGTH—sturdy resistance-welded construction.
- ▶ LIGHT WEIGHT—for greater load bearing capacity.
- ▶ SELF-CLEANING—for reduced maintenance costs.
- ▶ OPEN CONSTRUCTION—gives maximum ventilation and illumination.

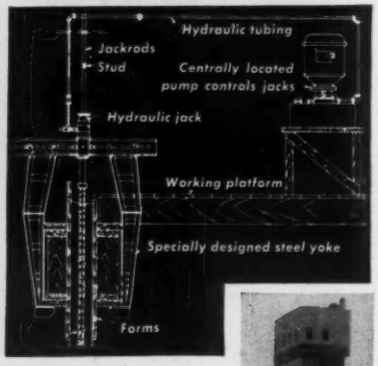
Ask for Bulletin E-98

ROCKWELL R STANDARD

ROCKWELL-STANDARD CORPORATION
GRATING DIVISION
4004 East Seventh Ave. • Gary, Indiana

© 1958

HYDRAULIC SLIPFORM SERVICE

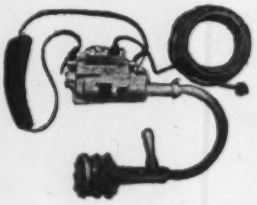


Jacks, yokes, pumps, pipes, jackrods — complete form-raising service at an all-inclusive rental. On-the-job engineers available. Proven method for bridge piers, silos, elevators, apartment houses, etc. Write for details.

MINE PITHEAD BUILDING

B. M. HEEDE, INC.
30-01 37th Ave., Long Island City 1, N. Y.
In San Francisco: 630 Sixth St.

"BERG"
CONCRETE SURFACER MODEL A



"Berg equipment is used extensively for surfacing and finishing applications on concrete construction.

The many "BERG" Models available, permit exact selection for your particular application.

The distinctive "BERG" features give you the kind of results that are realized in better quality work, combined with lower costs.

"BERG" Heads and Attachments are interchangeable, thereby providing adaptability for vibrating, wire brushing, sanding and polishing applications.

THE CONCRETE SURFACING MACHINERY CO.
4667 SPRING GROVE AVE.
CINCINNATI 32, OHIO

(Continued from page 152)

14.858 mi. State No. 28, Jefferson Co. Bids Aug. 5, awarded Aug. 7. CD 8/12, under LB.

▲ **IDAHO**—State Hy. Dpt., Boise,

Rogers Constr. Co., 11760 N.E. Glisan St., Portland, Ore., CA **$1,616,087**, constr. roadway, plantmix bit. surf., 212 ft. concrete underpass and two 36 ft. concrete bridges on 7.761 mi. Interstate No. 82 and 0.398 mi. Sebree connection, Elmore Co., Bids July 15, awarded Aug. 28, CD 7/23, under LB.

† **Mac Constr. Co.**, 3740 Lois Lane, Salt Lake City, Utah. LB **$119,386** (6 bidders) earthwork, concrete canal lining and structure gateway canal revision State 387 plus 65 to Station 401 plus 05BK, Weber Basin Proj., Spec. DC 5085, UTAH. Bureau Reclamation, Dpt. Interior, Ogden, Utah. Bids Aug. 28. CD 8/4.

† **UTAH**—Bureau P. Rds., U.S. Govt. Office Bldg., 1750 S. Redwood Rd., Salt Lake City, Bids opened 8/19,

Woodward Constr., Rock Springs, Wyo., LB **$111,000**, est. $164,000, base surf. 15.831 mi., Provo River-Hayden's Ford, Utah Forrest Hy. Proj. 34-C1-G-1, H-1, Summit Co. CD 4/6/56.

E. L. Standley, 719½ Court St., Pasco, Wash., CA Est. **$170,000**, rough grading 150 acres golf course, PASCO, WASH. City, City Hall, Pasco, Wash. Bids Aug. 5. D 8/1.

† **Harbert Bros.**, Box 7, Route 1, Estacada, Ore., CA **$122,339**, est. $119,492 (4 bidders) levees, Middle Fork Willamette River, Fisher location, Lane Co., CIVENG-35-026-59-28, OREGON. U.S. Eng., Pittock Block, Portland, Ore., Bids Aug. 27, CD 8/6.

† **L. C. Daniel**, 734 E. 20 St., Eugene, Ore., CA **$85,045** est. $106,371 (6 bidders) bank protection, Foster location, Willamette River, CIVENG-35-026-59-22, OREGON, U.S. Eng., Pittock Block, Portland, Ore., Bids Aug. 26, CD 7/31.

▲ **OREGON**—Hy. Comn., Hy. Bldg., Salem, Bids opened Aug. 26,

Ore.—**Brassfield & Purcell**, Salem, Ore., LB **$535,819** (11 bidders) grading, stone base 3.75 mi., paving 3.36 mi., Elkton-Smith Bridge section, Elkton-Sutherlin Hy. FAP DS-217(6) and S-217(7) Douglas Co.;

Ore.—**Roy L. Houck & Sons**, 1585 N. 20 St., Salem, Ore., LB **$739,796** (6 bidders) grading 6.86 mi., 2-105 ft. trestles, Belts Rd. Lane County section Pacific Hy. FAIP I-5-4(19)204, Linn Co.;

Ore.—**E. H. Itschner**, Molalla, Ore., LB **$172,328** (5 bidders) stone base and oiling 16.69 mi. Ukiah-Hilgard Hy., FAP DS-57(6) Union Co.;

Ore.—**Peter Kiewit Sons Co.**, 215 South V. St., Vancouver, Wash., LB **$406,586** (4 bidders) grading 1.45 mi. and paving 1.3 mi. Hunter Creek-Beuna Vista Wayside section of Oregon Coast Hy., FAP BF-124(15) Curry Co.;

Ore.—**Rogers Constr. Co.**, 11760 N.E. Glia St., Portland, Ore., LB **$1,699,492** (8 bidders) paving 14.3 mi. Sundial-Multnomah Falls section Columbia River Hy., FAIP I-82-1(11)14 and I-82-2(7)15, Multnomah Co.;

Ore.—**Fred H. Slate Co. & E. C. Hall Co.**, 7805 S.W. 40 Ave., Portland, Ore., LB **$497,258** (5 bidders) grading, paving, 3.45 mi. Middleton-Yamhill Co. line section of Pacific Hy. FAP DF-73(13) Washington Co.;

Ore.—**Warren Northwest, Inc.**, 9860 N.E. Hancock Dr., Portland, Ore., LB **$290,489** (5 bidders) grading 1.25 mi. and paving 0.98 mi. North Plains Interchange section Sunset Hy. FAP DS-186(18) Washington Co.

† **Cherf-Sandkay-Birch**, Ephrata, Wash., LB **$305,851**, (3 bidders) Schedule 1, earthwork, concrete lining and structures for Ashland Lateral diversion dam and Schedule 3 Ashland lateral exten. using concrete cylinder pipe (pretensioned) for siphons, Rogue River Basin Proj., Talent Div., Spec. DC-5084, OREGON, Bureau Reclamation Dpt. Interior, Camp White, Ore. Bids Aug. 28, CD 7/31;

Guy H. James Constr. Co., 4901 N. Sewell St., Oklahoma City, Okla., LB **$313,505**, Schedule 1, earthwork, concrete lining and structures for Ashland Lateral diversion dam and Schedule 2, Ashland lateral exten. using monolithic concrete for siphons, DC-5084 (Oregon).

† **C. T. Parker Constr. Co.**, Builders Exchange Bldg., Portland, Ore., LB **$155,350** (5 bidders) subgrade preparation at Portland International Airport, Inv. 59-9, PORTLAND, ORE. U. S. Eng., 1419 S. Alaskan Way, Seattle 4, Wash. Bids 8/28. CD 8/20.

▲ **CALIFORNIA**—Dpt. P. Wks., 1120 N St., Sacramento, Bids opened 8/20,

Madonna Constr. Co., P.O. Box 910, San Luis Obispo, Calif., CA **$1,022,594**, grading, surf. to constr. 8.7 mi. modern 2 lane hy. on State Sign Route 41 between 2 mi. east of Estrella River and Lucy Brown Rd. northeast of Shandon, San Luis Obispo Co. CD 8/22, under LB.

† **W. M. Lyles Co.**, P.O. Box 495, Avenal, Calif., LB **$86,101** (3 bidders) water and sewerage sys. (piping, manholes, septic tank, etc.) Sequoia and Kings Canyon National Parks, Tulare Co., CALIFORNIA. National Park Service, Office of Supt. Sequoia and Kings Canyon National Park, Three Rivers, Calif. CD 8/15.

CALIFORNIA—State Div. Hys., 1120 N. St., Sacramento, Bids opened 8/27,

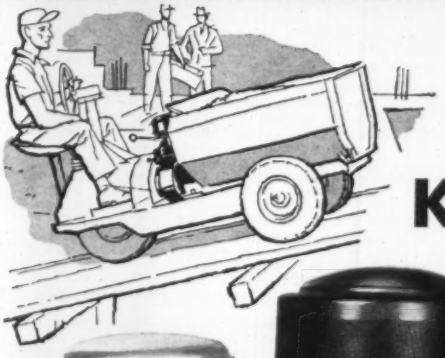
Calif.—**Erickson, Phillips & Weisberg**, 2554 Herndon Ave., Concord, Calif., LB **$588,847** (9 bidders) constr. bascule drawbridge over Grant Line Canal and Fabian and Bell Canal, FAS Co. Rd. 907 (Tracy Rd.) north of Tracy, X-S.J.-907, San Joaquin Co.;

Calif.—**Bos Constr. Co.**, 1035 Grayons St., Berkeley, Calif., LB **$295,664** (4 bidders) 321 ft. bridge over Pudding Creek and approach roadways State Sign Rte. 1 in and north of Fort Bragg, I-Men-56-FB 9, F, Mendocino Co. CD 7/31.

(Continued on page 156)

KOHLER ENGINES

4-CYCLE SHORT-STROKE AIR-COOLED



MODEL
K330

MODEL
K660

- Efficient and reliable
- Short-stroke means more usable power, cuts engine friction
- Hot spark assures quick, easy starting in all weather
- Balanced crankshaft — ball bearings reduce vibration
- Rugged construction—plenty of load-lugging power
- Kohler engines will do the jobs for which they are recommended

Send for 28-page illustrated booklet. **FROM 3 TO 24 H.P.**

KOHLER CO. Established 1873 KOHLER, WIS.

KOHLER OF KOHLER

Enameled Iron and Vitreous China Plumbing Fixtures • Brass Fittings • Electric Plants • Air-cooled Engines • Precision Controls

(Continued from page 154)

▲ **Frederickson & Watson Constr. Co. & Ransome Co.,** 873 81st St., Oakland, Calif., CA **$1,047,906** (joint venture) base rock drainage and electrical ducts for paved area at Metropolitan Oakland International Airport, OAKLAND, CALIF. Port of Oakland, c/o Secy., Room 73, Grove St. Pier, Oakland, Calif. Bids Aug. 25. CD 9/4, under LB.

Valley Engineers, P.O. Box 412, Fresno, Calif., LB **$138,708** (3 bidders) 2,745 lin. ft. pipe conduits, also manholes, inlets, catch basins, related work in various streets, OAKLAND, CALIF. City, City Hall, Oakland, Calif. CD 6/17/55.

▲ **Stolte, Inc.,** 8451 San Leandro St., Oakland, Calif., CA **$1,090,964,** road imprvs. Page Mill Rd. and Oregon Ave., Proj. 57-5, PALO ALTO, CALIF. City, City Hall, Palo Alto, Calif. CD 9/3, under LB.

McGillivray Constr. Co., P.O. Box 873, Sacramento, Calif., LB **$164,032** (4 bidders) curbs, gutters, sidewalks, manholes, subdivision imprvs. at Carello Gardens, Unit 2, SACRAMENTO, CALIF. City, City Hall, Sacramento, Calif. Bids Aug. 28. CD 8/14.

Collins Elec. Co., 1300 "U" St., Sacramento, Calif., LB **$102,777** (5 bidders) street lighting imprvs. at various locations (both fluorescent and mercury vapor lighting) SACRAMENTO, CALIF. City, City Hall, Sacramento, Calif. Bids Aug. 28. CD 8/21.

▲ **Gunther & Shirley,** 4560 Sherman Oaks Ave., Sherman Oaks, Calif., **E. V. Lane,** 2675 Park Blvd., Box 417, Palo Alto, Calif., **Thomas Constr. Co.,** 4665 E. Hedges, Fresno, Calif. and **Harms Bros.,** 5261 Stockton Blvd., Sacramento, Calif. LB **$5,230,175** (8 bidders) Cherry Power House at Hetch Hetchy Proj., incl. two 93,000 kw. turbines installing transformers and penstocks, SAN FRANCISCO, CALIF. Pub. Utilities Comn., City Hall, San Francisco, Calif. Bids Sept. 4. CD 8/19.

Lowrie Paving Co., 174 San Bruno Rd., South San Francisco, Calif. LB **$197,441** (4 bidders) resurf. streets in Excelsior Dist., Spec. 21.757, SAN FRANCISCO, CALIF. City and San Francisco Co., City Hall, San Francisco, Calif. CD 11/13/47.

M. J. Lynch Co., 2551 Revere St., San Francisco, Calif., LB **$177,214** (5 bidders) outfall sewer, Spec. 21.763, SAN FRANCISCO, CALIF. City and San Francisco Co., Dir. P. Wks., City Hall, San Francisco, Calif. CD 7/1/54.

BUILDINGS—LB & CA

Hebb & Narodick Constr. Co., Inc., 4225 23 Ave. W., Seattle, Wash., LB **$93,824** (3 bidders) general contract, 3 story, 60x100 ft. WAREHOUSE for manufactures' agent, SEATTLE, WASH. R. Merritt Co., 120 W. Thomas St., Seattle, Wash. W. Aitken, 408 Marion St., Seattle, Wash., archt.

Emblem Homes, Inc., 8906 W. Olympic Blvd., Beverly Hills, Calif. CA **$520,200,** 59 frame, stucco DWELLINGS, Hawaiian and Claretta Aves., ARTESIA, CALIF. Badge Bldg. Co., 8906 W. Olympic Blvd., Beverly Hills, Calif.

Emblem Hills, Inc., 8906 W. Olympic Blvd., Beverly Hills, Calif. CA **$513,400,** 58 frame stucco DWELLINGS, Wardham Ave., Grandnell St., Dartmoor Ave., ARTESIA, CALIF. Bonnie Brae Gardens, 8906 W. Olympic Blvd., Beverly Hills, Calif.

Campbell Constr. Co., 800 R St., Sacramento, Calif., CA **$951,926,** Del Oro HIGH SCHOOL, near Loomis, AUBURN, CALIF. Placer Union High School Dist., 100 Agard St., Auburn, Calif. CD 8/5.

Christensen & Foster, P.O. Box 55, Santa Rosa, Calif., LB **$429,890** (3 bidders) 10,100 sq. ft. steel frame, heavy timber roof framing, etc., Indian Springs School NATATORIUM, BIG BEND, CALIF. Indian Springs Elem. School Dist., c/o Principal, Big Bend, Calif. Clayton Kantz, A1A, 2021 Court St., Reading, Calif., archt.

Claremont Constr. Co., 168 Rea St., El Cajon, Calif. Owner Builds. **$917,145.** 69 frame, stucco DWELLINGS, Country Crest Dr., Jasmine St., EL CAJON, CALIF.

▲ **John E. Branagh & Son,** 42 La Salle Ave., Piedmont, Calif., CA **$1,604,500,** Frick JUNIOR HIGH SCHOOL, OAKLAND, CALIF. Oakland Bd. Educ., Admin. Bldg., 1025 2nd Ave., Oakland, Calif. Bids Aug. 12. CD 8/20, under LB.

H. M. Keller, 2311 Empire Ave., Burbank, Calif., CA **$176,000,** 142x150 ft concrete STORAGE BLDG., 16225 San Fernando Mission Rd., SAN FERNANDO, CALIF. Robt. & Helen Wilson, 2701 W. Olive St., Burbank, Calif. George Novikoff, 3558 W. Santa Barbara St., Los Angeles, Calif., engr.

▲ **C. N. Swenson Co., Inc.,** 1095 Stockton Ave., San Jose, Calif., LB **$1,100,000** (8 bidders) rein.-con. tilt up constr. product development LABORATORY BLDG., SAN JOSE, CALIF. IBM Corp., 590 Madison Ave., New York City, N. Y. Bids July 24. CD 7/16.

CANADA

HEAVY CONSTRUCTION—LB & CA

Telford Constr. Ltd., 12415-110 Ave., Edmonton, Alta., CA **$82,188.** drainage flume and appurtenant structures near Grande Prairie, ALBERTA, Alberta Govt., Parliament Bldgs., Edmonton, Alta.

ALBERTA—Alberta Govt., Parliament Bldgs., Edmonton, Alta.—**Mamczasz Constr. Ltd.,** Edmonton, Alta., CA **$107,672,** stab. grav. base course about 5 mi. Hy. No. 28 from Grand Centre to Cold Lake;

Alta.—**Floyd Barber Ltd.,** Edmonton, Alta., CA **$427,663** (6 bidders) stab. grav. base course 8 mi. Hy. 2 from Innisfail to east of Penhold. CD 12/1/43.

ALBERTA—Alberta Govt., Parliament Bldgs., Edmonton, **A. A. Voice Constr. Co., Ltd.,** 10263 111 St., Edmonton, Alta., CA **$96,889.** repairing several road allowances on McLennan-Girouxville canal McLennan-Girouxville. Awarded Aug. 27. CD 12/1/43.

Assiniboia Constr. Co., Ltd., Pearce Estate, Calgary, Alta., LB **$736,765,** about 1,200 ft. tunnel diversion 3 mi. from Hillspring, ALBERTA. Prairie Farm Rehabilitation, Administration Bldg., Regina, Sask. CD 5/9/45, under Alta., Red Deer.

BRITISH COLUMBIA—B. C. Govt., Parliament Bldgs., Victoria.

Commonwealth Constr. Co. Ltd., 700 Taylor St., Vancouver, B. C., LB **$90,834** (5 bidders) Contr. S-0358, bit. surf. East Hastings St., Burnaby. CD 10/29/46.

MANITOBA—Manitoba Govt., Legislative Bldgs., Winnipeg,

Man.—**Stratton Eng. Co. Ltd.,** 784 Notre Dame Ave., Winnipeg, Man., LB **$295,590** (8 bidders) grading Hy. 10 from Atik to Simonhouse Wekusko Rd.;

Man.—**Carter Constr. Co. Ltd.,** 525 Kylemore St., Winnipeg, Man., LB **$247,605** (5 bidders) grading Hy. 10 from Simonhouse Wekusko Rd. to Cranberry Portage;

Man.—**LeFleche Constr. Co. Ltd.,** 6328 Roblin St. Winnipeg, Man., LB **$75,249** (12 bidders) drainage and embankment about 7 mi. Hy. No. 2 in municipalities of South Cypress and Oakland.

Don Middleton, Neepawa, Man., LB **$74,992.** rolled earth fill dam on Mary-Jane Creek tributary of Pembina River near Manitou, MANITOBA. Prairie Farm Rehabilitation Admin., Regina, Sask.

Simkin's Constr. Co., Ltd., Andrews and Jarvis Sts., Winnipeg, Man., CA **$82,349,** rein.-con. pavement, sewers and water mains on various streets, ST. JAMES, MAN. City, City Hall, St. James, Man. Awarded Aug. 26.

McNamara Constr. Co., Ltd., 42 Industrial St., Leaside, Toronto, Ont., LB **$458,995** (2 bidders) resurfacing runways, constr. parking area, recapping roads and related work, GANDER, NEWFOUNDLAND. Dpt. Transport, Hunter Bldg., Ottawa, Ont. Bids Aug. 29. CD 8/15.

ONTARIO—Dpt. Hys., Parliament Bldgs., Toronto,

K. J. Beamish Constr. Co., Ltd., Box 189, Thornhill, Ont., LB **$121,086** (10 bidders) widening Downsview Ave. from Keeley St. westerly and owners parking lot at Downsview. CD 12/8/50.

ONTARIO—Dpt. Hys., Parliament Bldgs., Toronto,

Hacquoil's Constr. Co., Ltd., 1408 Brown St. Fort William, Ont., LB **$174,854** (7 bidders), Contr. 58-164, hot mix paving 13.16 mi. Trans Canada Hy. 17 from Redrock turn to Nipigon River, 7.31 mi. and Hy. 11 McDiramid north and south 5.7 mi., Redrock. Bids Aug. 27. CD 8/15.

KNOW CONSTRUCTION COSTS

AVOID COSTLY ERRORS IN ESTIMATING

These two great books on Construction Estimating and Cost can help you . . .

Acclaimed by Contractors, Architects, Engineers, Industrial Firms, School Boards, Municipal and Governmental Agencies as the two most authentic books on Construction cost written to date. Written and compiled by Jacques Ing Cramer Priest, president of Estimators Ltd., nationally known firm of professional construction estimators.

The Architect's Estimator
and Cost Reference Guide

New 1958 revised and enlarged edition. Post Paid **$25**

Covers complete unit cost including contractor's overhead and profit on hundreds of items indispensable in establishing realistic cost budgets and includes checking and controlling change orders. Revised up to date units available yearly.

The Professional Construction Estimator
Labor and Materials Calculator

Price Post Paid **$15**

Extensively used by the Construction Industry in compiling conservative estimates for bidding purposes. Gives Labor time and Materials required, excluding overhead and profit, on hundreds of items. 18 Sections covering Architectural, Structural, Mechanical, Electrical and Sub-contract items. A handy, pocket size for use by personnel in the field.

ORDER TODAY

THE PROFESSIONAL PUBLISHING CO., P.O. Box 6, Laguna Beach, California

Please send Post Paid, the following:

_____copies . . . The Architect's Estimator @ $25 each

_____copies . . . The Professional Construction Estimator @ $15 each

_____ Please send me both books at 10% discount or $36 per set

Name (please print)_____

Address_____

City_____ State_____

Enclosed is cash_____ Check_____ Money Order_____ Purchase Order_____ C.O.D._____

ONTARIO—Dpt. Hys., Parliament Bldgs., Toronto, **McNamara Road Constr. Co., Ltd.**, 42 Industrial St., Leaside, Toronto, Ont., CA **$872,350** (6 bidders) Contr. 58-176, grading, culverts, gran. base 9.98 mi. Hy. 11 from Opasatika to Lowther. Bids Aug. 27, awarded Aug. 29. CD 7/31.

ONTARIO—Dpt. Hys., Parliament Bldgs., Toronto, Ont.—**Sir Lindsay Parkinson Canada Ltd.**, 659 Yonge St., Toronto, Ont., LB **$407,769** (10 bidders) White Lake Narrows Bridge and approaches, Trans Canada Hy. 17, about 20 mi. east of Hemlo;
Ont.—**Ardelt Industries of Canada Ltd.**, 181 Henry Sturm Blvd., Kitchener, Ont., LB **$88,788** (11 bidders) structural steel for Madawaska River Bridge, Hy. 62, Combermere, Bancroft.

ONTARIO—Dpt. Hys., Parliament Bldgs., Toronto, **Orsini Constr. Ltd.**, 363A Rogers Rd., Toronto, Ont. LB **$336,495** (5 bidders) Canadian National Railway overhead at intersection of Hys. 2 and 27 Toronto. Bids Aug. 27. CD 7/31.

Eagle Ltd., 8130 Decarie Blvd., Montreal, Que. CA **$96,764**, underground water collection system, ground storage reservoir, pumping station and distr. sys., ALFRED, ONT. Ontario Water Resources Comn., East Block, Parliament Bldgs., Toronto, Ont. Bids July 21, awarded Aug. 27. CD 6/30.

Baldasero & MacGregor, 5 Hillyard St., Hamilton, Ont. CA **$94,039** (6 bidders) Contract D, supplying materials and installing 7,000 lin. ft. 16 and 12 in. water mains, appurtenances, DUNDAS, ONT. Ontario Water Resources Comn., East Block, Parliament Bldgs., Toronto, Ont. Bids Aug. 11, awarded Aug. 26. CD 7/24;
James Kemp Constr. Ltd., 121 Vansitmart St., Hamilton, Ont. CA **$76,500** (14 bidders) Contract E, supplying materials and constr. 1 m.g. rein.-con. reservoir and appurtenant works (Dundas, Ont.)

Orsini Constr. Ltd., 363A Rogers Rd., Toronto. CA **$200,000**, subway under Canadian National Railway tracks at Greenwood Ave., TORONTO, ONT. Canadian National Railway Co., Rm. 436, Union Station, Toronto, Ont. Bids Aug. 21, awarded Aug. 29.

▲ **Collet Freres Ltee.**, 1978 Parthenais St., Montreal, Que. CA Est. **$3,500,000** race track imprvs., incl. clubhouse, stables, offices, grandstand and tracks, MONTREAL, QUE. Blue Bonnets Raceway, Inc., Blue Bonnets Race Track, west of Decarie Blvd., Montreal, Que. Brouillet & Carmel, 3600 Barcley Ave., Montreal, Que., engrs. Awarded Aug. 29. CD 6/10.

Charles Duranceau, Ltd., 2545 Jacques Hertel St., Montreal, Que., LB **$196,000** (11 bidders) constr. foundations of administration bldg. and toll plaza at South Shore end of Jacques Cartier bridge, MONTREAL, QUE. National Harbors Bd., West Block, Parliament Bldgs., Ottawa, Ont. CD 6/28.
Miron Construction Ltd., 2201 Cote St. Michel Rd., Montreal, Que., LB **$162,500**, supply and placing of fill on Nun's Island, Champlain Bridge proj. over Nun's Island (Montreal, Que.).

Edouard Monette Ltee., 2190 Gouin Blvd. E., Montreal, Que. CA **$46,000**. water mains, ST. ELZEAR, QUE. Ville St. Elzear, 1843 Ave. Lavoie, St. Elzear, Que. Alfred Toottier, 8596 Ave. Chateaubriand, Montreal, Que., engr. Awarded Aug. 29.

Evans Constr. Co. Ltd., 1700 Quebec St., Saskatoon, Sask. LB **$172,469**, 12-mile access road from Saskatchewan Hy. 19 near Loreburn to dam site south of Saskatchewan River, Regina, SASKATCHEWAN. Prairie Farm Rehabilitation Admin., 910 McCallum Hill Bldg., Regina, Sask.

Harper Constr. Co. Ltd., 116A Grain Exchange Annex, Winnipeg, Man. CA **$85,882**, 500,000 gal. rein.-con. water storage reservoir and pumphouse, WEYBURN, SASK. City, City Hall, Weyburn, Sask. Bids Aug. 12, awarded Aug. 25.

BUILDINGS—LB & CA

C. J. Oliver Ltd., 660 Howe St., Vancouver, B. C. CA **$600,000**. SHOPPING CENTER, NORTH KAMLOOPS, B. C. Caledonia Leaseholds (B. C.) Ltd., c/o McKee & Gray, archts., 355 Burrard St., Vancouver, B. C. Awarded Aug. 29.

Ward & Son Ltd., 709 Agnes St., New Westminster, B. C. CA **$676,030**. rein.-con., structural steel, wood frame Balmoral JUNIOR HIGH SCHOOL, NORTH VANCOUVER, B. C. School Dist. No. 44, North Vancouver, B. C. Bids Aug. 5, awarded Aug. 26. CD 8/18, under LB.

Blackeburn Constr. Ct. Ltd., Terrace, B. C. LB **$689,103** (7 bidders) concrete frame SENIOR HIGH SCHOOL, PRINCE RUPERT, B. C. School Dist. No. 52, Prince Rupert, B. C. Bids Aug. 22. CD 8/11.

E. H. Shockley & Son Ltd., 1936 Powell St., Vancouver, B. C. CA **$919,290**. 6 story, rein.-con. OFFICE, Davie St. near Burrard St., VANCOUVER, B. C. Metropolitan Medical Centre, c/o 1350 W. Pender St., Vancouver, B. C. Awarded Aug. 26. CD 8/18, under LB.

Farmer Constr. Ltd., 2925 Douglas St., Victoria, B. C. LB **$467,258**, 43 frame, stucco HOUSING UNITS, Belmont Park, VICTORIA, B. C. Central Mortgage & Housing Corp., 2286 W. 12 St., Vancouver, B. C. CD 8/12/49.

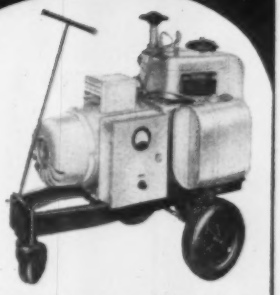
E. Brunet & Sons Ltd., 9 Dumas St., Hull, Que., CA **$500,000**, 98x99 ft. concrete fdns., brick, concrete walls, rein.-con. floors, pre-cast slabs, heat POWER PLANT and TUNNEL, OTTAWA, ONT. Grey Nuns of the Cross, 9 Bruyere St., Ottawa, Ont. A. Martineau, 72 Queen St., Ottawa, Ont., archt.

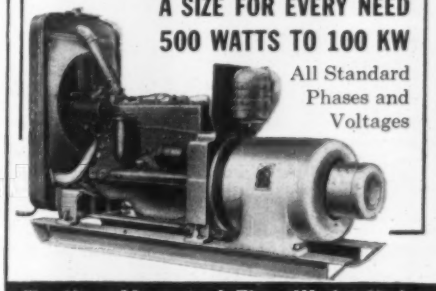
C. A. Johannsen & Sons Ltd., 51 Young St., Ottawa, Ont. CA Est. **$135,000**. 1 story, 10,000 sq. ft. brick, steel WAREHOUSE and OFFICE, concrete fdn., OTTAWA, ONT. Harris-Renwick Co. Ltd., 299 Rich-

Power Plants Speed Construction

USE POWER TOOLS—FLOOD LIGHTS

WINPOWER PORTABLE ELECTRIC PLANTS
provide a dependable, low cost power source . . . speed up work performance by operating time and labor saving power tools. Wherever the job—whatever the need—you can count on a WINPOWER Electric Plant to meet your requirements.





A SIZE FOR EVERY NEED
500 WATTS TO 100 KW
All Standard Phases and Voltages

These rugged, heavy-duty 3-wheel dollies are used as a permanent mounting for 3, 4, and 5 KW electric plants where portability is desired by contractors, bridge builders, mine operators, road constructors, railroads, cities and municipalities.

Trailer-Mounted Floodlight Unit

MAKE NIGHT HOURS PAY with NITE-HAWK

Four 80,000 c.p. flood lights raise to 8½ ft.—aim in all directions. Control panel has duplex receptacles for extension light and power tool lines—voltage regulator—circuit breakers—fused circuits.

Tows at highway speeds on heavy-duty trailer with leaf springs—retractable caster wheel. This is the finest, most flexible unit available. 5 KW, 115 or 230 Volt.

Powered by Wisconsin 4 cylinder, air-cooled engine

WRITE FOR LITERATURE AND PRICES

WINPOWER MFG. CO.
Dept. G-59 Newton, Iowa

PUMPS FOR EVERY INDUSTRY

VERTICAL TURBINE PUMPS . . . for wells 4 to 16 inches I.D. Capacities 15 to more than 3500 G.P.M. Bulletin No. 4700.

END-SUCTION CENTRIFUGAL PUMPS . . . two ball bearing type. Semi-open non-clogging impeller. Separate liquid end in standard iron or corrosion-resistant material. Optional features adapt to many requirements. Bulletin 4011.

VERTICAL SUMP PUMPS . . . single and duplex units, designed for wet pit service. Efficient, dependable with the latest construction and design features.

"MOTOR MOUNT" CENTRIFUGAL PUMPS . . . pumps range from 1½" to 5" discharge . . . capacities to 1200 gallons per minute. From 1 to 30 hp.

MULTI-STAGE HIGH PRESSURE VERTICAL CENTRIFUGAL PUMPS . . . designed for general industrial use. Handles liquids which are non-corrosive to iron and bronze. Ideal for boiler feed service.

DEMING has them all!

Write for complete information . . .

THE DEMING COMPANY • 536 Broadway, Salem, Ohio

Please send me a copy of your Industrial Pump Bulletin I-57-E describing pumps for every industry.

Name _____

Address _____

Company _____

City _____ Zone _____ State _____

PROTECTION

Don't overlook a major hazard.

Maintenance, service and construction vehicles are often victims of highway hazards, especially when stopped for necessary work.

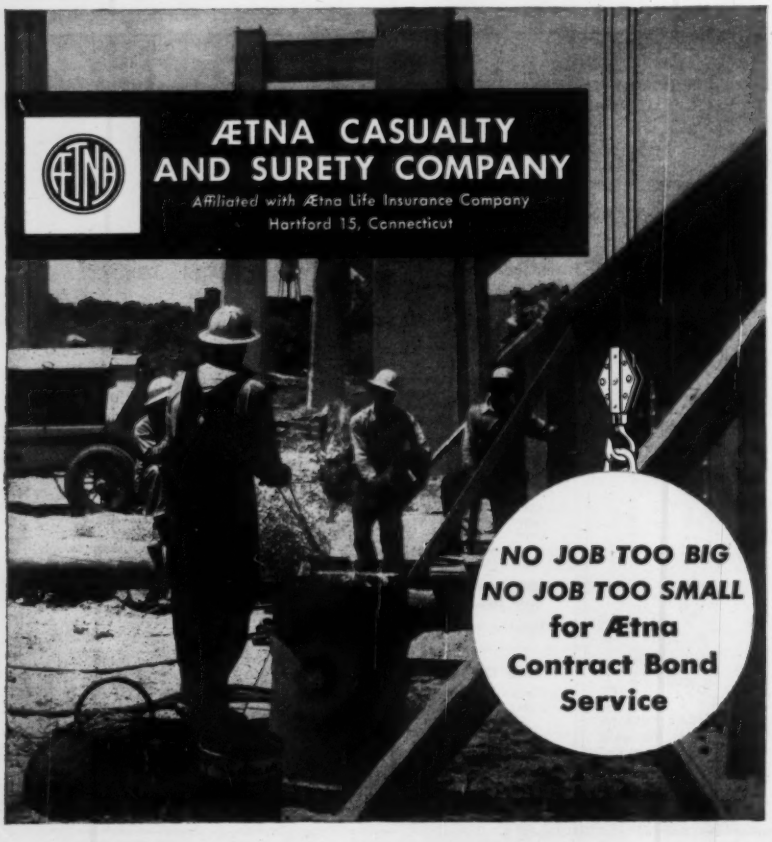
Don't forget also, that FEDERAL is America's largest manufacturer and contractor for interstate, turnpike and expressway signs and supporting structures.

Don't let some careless motorist knock a truck out from under your men; Beacon Ray lights alert the unwary motorist. You can avoid loss of life and injury, loss of equipment and repair work, and avoid lawsuits and legal claims, with these beacons of protection at the scene of emergency.

You have seen Beacon Rays, 360° revolving lights, on fire trucks, ambulances and police cars. You are entitled to and can have the *same safety factor* on your repair and emergency vehicles.

Write today, ask us about FEDERAL Beacon Ray Lights.

FEDERAL SIGN and SIGNAL Corporation 8777 S. State St., Chicago 19, Ill.



mond Rd., Ottawa, Ont. Burgess & McLean, Fraser Bldg., 53 Queen St., Ottawa, Ont., archts.

Eastwood Constr. Co. Ltd., Dominion Bank Bldg., Peterborough, Ont. CA $982,407 (12 bidders) HOME FOR AGED, Langton St., PETERBOROUGH, ONT. City, City Hall, Peterborough, Ont. Bids Aug. 11, awarded Aug. 27. CD 7/18.

Elderwood Constr. Co., 895 Eglinton Ave. W., Toronto, Ont., Owner Builds. $420,000, 5 story, brick constr., open web steel joists 60 suites APARTMENT, concrete block fdn., 612 Dawes Rd., TORONTO, ONT. E. I. Richmond, 455 Spadina Ave., Toronto, Ont., archt.

Wintergreen Constr. Co., H. Winkler, 98 Dewbourne Ave., Toronto, Ont., Owner Builds. $384,000, 5½ story, brick, APARTMENT, concrete block fdn., 51-67 Gamble Ave., TORONTO, ONT. Venchiarutti & Venchiarutti, 194 Wilson Ave., Toronto, Ont., archts.

Wintergreen Constr. Co., J. Binder, 33 Fraserwood Ave., Toronto, Ont., Owner Builds. $360,000, 5 story, brick constr., open web steel joists, APARTMENT, concrete block fdn., 45 Gamble Ave., TORONTO, ONT. Venchiarutti & Venchiarutti, 194 Wilson Ave., Toronto, Ont., archts.

Henri J. Fournier, 4 Leon Bloy St., Laprairie, Que. CA Est. $400,000 (6 bidders) 2 story, bsmnt. 59x228 ft., rein.-con. ELEMENTARY SCHOOL, LAPRAIRIE, QUE. La Commission Scolaire Catholique de Laprairie, Laprairie, Que. Roland Dumais, 3995 Sherbrooke St. E., Montreal, Que., archt. J. Richard Lessard, 6766 De Lorimier Ave., Montreal, Que., engr. Awarded Aug. 26.

▲ **Anglin-Norcross (Quebec) Ltd.**, 892 Sherbrooke St. W., Montreal, Que., CA $4,750,000, 14 story OFFICE, University St. and Dorchester St. W., MONTREAL, QUE. Prudential Assurance Co. Ltd. (of England) 465 St. John St., Montreal, Que. Bids Aug. 22. CD 7/31.

ALASKA

HEAVY CONSTRUCTION—LB & CA

† **ALASKA**—Bureau P. Rds., Dpt. Commerce, Federal Bldg., Juneau, Bids opened 8/26.

E. and B. Constr. Co., Nome, Alaska, LB $81,368 (4 bidders), constr. 2 steel bridges over Snake and Penny Rivers on Nome-Teller Rd., Proj. S-0131 (1). CD 8/11.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Calif., Santa Cruz**—City, City Hall, $5,500,000 bond election Nov. 4, constr. Newell Creek Dam located near Ben Lomond in the Santa Cruz Mountains. CD 7/23/56.

Fla., Milton—Santa Rosa Co. Bd. Commrs. waterworks imprvs. Over $100,000, Smith & McGriff, 313 E. University Ave., Gainesville, consult. engrs.

Fla., Valparaiso—City, City Hall, 100,000 gal. steel water tank and water lines. $160,000. John Sims, Valparaiso, consult. engr. Bids in October.

Kan., Chanute—City, City Hall, water treatment plant, auxiliaries, appurtenances, $688,000; water sys. imprvs., incl. 400,000 gal. elevated storage tank and distr. lines extensions, etc., $162,000. Wilson & Co., 632 E. Crawford St., and P.O. Box 28, Salina, engrs. CD 8/13.

Kan., Kingman—City, City Hall, voted $180,000 bonds Aug. 5, WW sys. imprvs., incl. 500,000 gal. reservoir, 8 and 10 in. connections to loop line from tower. CD 7/28.

S. C., Anderson—City, WW imprvs. $300,000. Harwood Beebe Co., P. O. Box 2405, Spartanburg, consult. engr.

Tex., Ennis—City, City Hall, $346,000 bond election Sept. 6, water service imprvts. CD 7/31.

SEWERS, WASTE DISPOSAL

Calif., Stratford—Stratford P. Utilities Dist., voted bonds Aug. 12, sewer collection sys. and treatment plant. $232,000. Braun & Pasillas, 2912 Blackstone, Fresno, consult. engrs. CD 6/18.

▲ **Fla., Dayton Beach**—City, City Hall, (1) main trunk sewer from treatment plant to NE section $1,500,000 (2) sanitary sewer trunk, peninsular, $1,500,000 (3) sewage treatment plant addn. $1,000,000, Russell & Axon, Municipal Airport, consult. engrs. CD 6/10/53.

Fla., Deland—Bd. Comrs. Volusia Co. Courthouse, sewage treatment plant and lines. Over $200,000. Briley, Wild & Assocs. 8 N. Wild Olive Ave., Daytona Beach, consult. engrs.

Fla., Milton—Bd. Commrs. Santa Rosa Co., sanitary sewer imprvs. over $150,000, Smith & McGriff, 313 E. University Ave., Gainesville, consult. engrs.

▲ **Idaho, Boise**—Boise Bench Sewer Dist., Willis Moffatt, Secy., Idaho Bldg., voted bonds Aug. 26, sewer sys., $4,350,000, Earl Reynolds, Jr., Idaho Bldg., consult. engr. CD 8/27.

Ill., Durand—Village, Village Hall, plans by DeJong Middaugh & Assoc., Empire Bldg., Rockford, sewage treatment plant, sanitary sewers, $250,000. CD 1/22/47.

▲ **Ill., East Moline**—City, City Hall, sewage disposal plant, $1,200,000.

Mo., Neosho—City, City Hall, voted $120,000 bonds sewer sys. extensions and improvements.

Mo., Webb City—City, City Hall, $680,000 bond election Sept. 9, sewage disposal plant. Election date extended. CD 8/13.

Neb., Orchard—Village, Village Hall, sewage treatment plant and sanitary sewer lines. $140,000. Kirkham,

Michael & Assoc., 508 So. 19th St., Omaha, Neb., engrs.

N. C., Ellerbe—Town, Town Hall, sewage disposal plant. $115,000. Moore, Gardner & Assocs., 514 S. Fayetteville St., Asheboro, consult. engrs.

N. C., Troy—Town, Town Hall, sanitary sewer extens. $225,000.

▲ **Ore., Salem**—City, City Hall, treatment plant facilities. $1,800,000. Constr. in 1961.

S. C., Anderson—City, sanitary sewer imprvs. $500,000. Harwood Beebe Co., P. O. Box 2405 Spartanburg, consult. engr.

Tex., Baytown—LeRoy B. Walker, Builder-Developer, 5666 Willers Way, Houston, sanitary sewers, $77,500; storm sewers, $75,000 (old Fairground site). Broyles & Bynum, Baytown, consult. engrs.

▲ **Tex., Fort Worth**—City, City Hall, bond election Nov. 18, incinerators. $1,550,000. CD 8/18.

Tex., San Antonio—H. B. Zachry Co., Constr. Div., Box 10188, storm sewers, $75,000; sanitary sewers, $78,000, Castle Hills, Unit 1.

BRIDGES

▲ **D. C., Wash.**—D. C. Govt., Dpt. Hys., 499 Pa. Ave. N.W., grade separation Missouri Ave. and Georgia Ave., $4,000,000; Washington Channel Crossing to join 14th St. Bridge, $8,715,000 appropriated; 14th St. Bridge, $9,200,000 appropriated; Pierce Mill Bridge Rock Creek Park, $315,000 appropriated; constr. bridge, 4th St. S.E. over Oxon Run, $178,000 appropriated.

PENNSYLVANIA—State Hys. Dpt., 506 North Office Bldg., Harrisburg,

Bucks Co.—approach to proposed bridge over Delaware River at Yardley. $830,000. Michael Baker, Jr., Inc., Rochester, consult. engr.

STREETS AND ROADS

† **Alaska**—Bureau P. Roads & Spenard P. Utility Dist., 48 ft. curb to curb paved highway for ¾ mi. from Spenard Rd. and paving 24 ft. section with 8 ft. shoulder for 1¾ mi. to Lake Otis Rd. on Northern Lights Blvd., Spenard and Anchorage area. $230,000. Gustov V. Johnson R. E., 900 5th Ave., Anchorage, consult. engr. CD 6/6/52.

▲ **D. C., Wash.**—D. C. Govt., Dpt. Hys., 499 Pa. Ave. N.W., constr. K St. Expressway, Washington Circle, underpass and approaches, $6,405,000; paving and structures, Louisiana to Michigan Aves., $1,050,000 appropriated; Hawaii Ave. to 16th St., $2,625,000, appropriated; constr. Potomac River Freeway, $5,250,000 appropriated; contr. West Leg of Inner Loop, $500,000 appropriated; connecting Southwest Freeway to North Leg of Inner Loop, $1,050,000 appropriated; constr. Southwest Freeway, $7,140,000 appropriated; paving "C" St. N.W., Virginia Ave. to 23 St., $145,000 appropriated; paving Wisconsin Ave. N.W., "Q" to "R" Sts., $157,500 appropriated; paving Texas Ave. S.E., Ridge Rd. to "C" St., $160,000 appropriated; constr. Michigan Ave. Railroad grade separator structure, $630,000 appropriated; sidewalk and alley work, 1958-59, $400,000 appropriated; paving and surfacing Monroe St. N.E., 12th to 18th Sts., $130,000 appropriated; paving and surfacing 4th St. N.E., Morse to Penn Sts., $108,000 appropriated; resurfacing, cover method, 1958-1959, $655,800; resurfacing, Heater Method, 1958-1959, $708,200; curb and gutter work, 1958-1959, $449,400; Key Bridge Interchange, $1,575,000 appropriated; Glover-Archbold Parkway Chain Bridge Rd. to Tenley Circle, $1,680,000 appropriated.

▲ **Ill., Elgin**—City, City Hall, widening Liberty St. (Route 25) to 52 ft. of 4 mi., $1,000,000.

▲ **Mich., Livonia**—City, City Hall, bond election Nov. 4, imprv. streets. $1,000,000.

Miss., Moss Point—City, City Hall, asphaltic hot mix resurf. various streets. $250,000. CD 1/23/53.

O., Cincinnati — Hamilton Co. Bd. Comrs., widening, resurf. Columbia Ave., Reading. $250,000. E. A. Gast Co., 906 Main St., consult. engr. CD 11/9/56.

▲ **PENNSYLVANIA**—State Hys. Dpt., 506 North Office Bldg., Harrisburg,

Allegheny Co.—1.28 mi. hy. between White Hall and Baldwin Boros, $185,000, Grof & Myers, 1824 N. 4th St., Harrisburg, consult. engrs. CD 10/16.

York Co.—spur from York By-Pass (US 111) to center York City, $1,250,000, Buchart Engineering Corp. York, consult. engr.

▲ **Tex., Fort Worth**—City, City Hall, bond election Nov. 18, streets, storm sewers, traffic signals, street lighting. $22,875,000. CD 8/18.

SASKATCHEWAN—Dpt. of Hys., Govt. of Saskatchewan, **Regina**—9 mi. stretch of hy. 24 ft. wide, 4 ft. left shoulder paved, 10 ft. right shoulder paved, 17 in. base, 4 in. blacktop, addn. to Trans-Canada Hy. from Regina east to make it into a 4 lane divided hy. features first divided 4 lane hy. in province. $850,000. CD 10/1/43.

EARTHWORK, WATERWAYS

† **Indiana**—U. S. Eng., P. O. Box 59, 830 W. Broadway, Louisville 1, Ky., clearing part of Mansfield Reservoir, $100,000-$200,000. Bids about January 1959.

▲† **Kentucky and Indiana**—U. S. Eng., P.O. Box 59, Louisville, Ky., excav. about 4,000,000 cu. yd. earth and rock, guide cells and guide wall, demolition 16th St. lift bridge, etc., Locks & Dam 41. $5,000,000-$10,000,000. Bids about February 1959.

▲† **Kentucky and Indiana**—U. S. Eng., 830 W. Broadway, Louisville, Ky., Markland Locks and Dam consisting 12-42 x 100 ft. tainter type gates, concrete piers and sill, excav. right bank 800,000 cu. yd. Over $10,000,000. CD 12/27/55; 60 ft. x 30 ft. concrete block shop, road surf., esplanade paving, etc. radio and intercom sys., $50,000-$100,000.

▲† **Kentucky and Tennessee**—U. S. Eng., 306 Federal Office Bldg., Nashville, Tenn., 110 x 800 ft. concrete lock, complete with necessary appurtenances incl. lock chamber, operations bldg., access road, etc. Installation of Government-furnished temporary navigation facilities, Barkley Dam Proj., Cumberland River. Over $10,000,000; furnishing, installing 4 main unit generators with full power rating, $5,000,000-$10,000,000.

▲† **Kentucky**—U. S. Eng., P. O. Box 59, Louisville 1, Ky., clearing part of Buckhorn Reservoir area. $100,000-$200,000. Bids about March 1959.

▲† **Kentucky**—U. S. Eng., 830 W. Broadway, Louisville, clearing part of Rough River Reservoir, $500,000-$1,000,000. Bids about October, 1958. CD 9/9; two dwelling houses, shop bldg., water tower, sewers and utilities, landscaping, etc., $50,000-$100,000. Bids about September 1958.

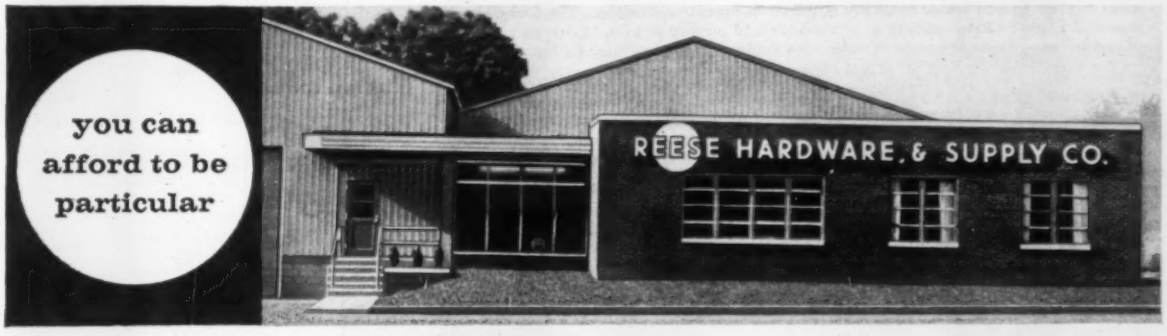
▲† **Kentucky**—U. S. Eng., P.O. Box 2127, 237 Fourth Ave., Huntington, W. Va., clearing area between existing pools and new Greenup pool between Greenup Dam and Gallipolis Dam and disposing all cleared materials, Greenup Locks and Dam Proj., Ohio River, $200,000-$500,000; constr. two rein.-con. box culverts 14 ft. x 12 ft. and 16 ft. x 14 ft. thru C & O Railway embankment in Kentucky; 5 tunnel liner culverts varying in size from 60 in. to 162 thru hy. embankments in Kentucky and West Virginia and twin 6 x 10 ft. rein.-con. box culvert thru hy. embankment in Kentucky, $5,000,000-$10,000,000. Bids about October 1958.

† **Ohio and West Virginia**—U. S. Eng., 925 New Federal Bldg., Pittsburgh 19, Pa., dredging lower approach to locks, New Cumberland Locks and Dam, Ohio River, $100,000-$200,000. CD 10/1.

▲† **Ohio and West Virginia**—U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., Dillon Reservoir Proj., Licking River, relocating and readjusting hys., $2,000,000-$5,000,000. Bids about January; constr. Pleasant Valley Dike, $200,000-$500,000. Bids about February. CD 9/5/57.

† **O., Rossville**—U. S. Eng., 237 Fourth Ave., Huntington, W. Va., straightening, imprv. 7,300 ft. Moxahala Creek, constr. earth levee along left bank of reconstr. channel and constr. railroad bridge, $500,000-$1,000,000. Bids about October.

▲ **Pa., Erie**—Port Comm. of City, City Hall, reclamation of bayfront areas, berths for deep draught shipping,



with **STEELCRAFT** standard steel buildings

You want to build to meet your needs. But estimates for "conventional" construction range from $8-$10 per sq. ft. What do you do if your building budget won't stretch? Take less space than you need? Take the space but forego the functional or esthetic refinements? Forget it altogether?

You need not accept any of these uncomfortable alternatives if you think in terms of a Steelcraft building. Within your reasonable budget—as low as $2.50 per sq. ft. completely erected including foundation and floors—you can obtain exactly the building you need and want—fast.

Standardization permits quick delivery and fast erection at only a fraction of the usual material and labor cost. And, with the money saved on your basic building, you can afford to be particular about architectural detail.

New York City Office, 342 Madison Ave.,
Phone OXford 7-6817

Find out about Steelcraft's new Finance Plan that allows you to pay for your building in low monthly installments.

STEEL Craft mail this coupon now

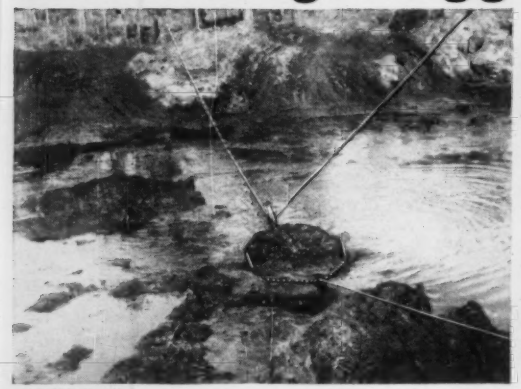
New York City Office
342 Madison Ave.

The **STEELCRAFT** Manufacturing Co.
9017 Blue Ash Road Dept. 918E
Cincinnati 42, Ohio

Send me your new 20-page Standard Steel Building Catalog describing building types, construction details, and applications.

Name_____
Company_____
Street_____
City_____ State_____

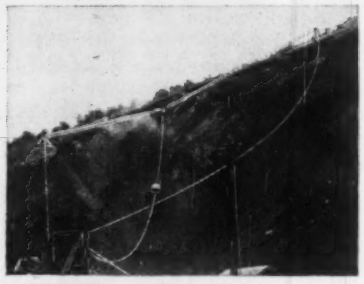
Got A Tough Digging Job?



• SOFT GROUND

• DEEP WATER

• NARROW SPACE



• STEEP HILLS

Use A Sauerman DragScraper

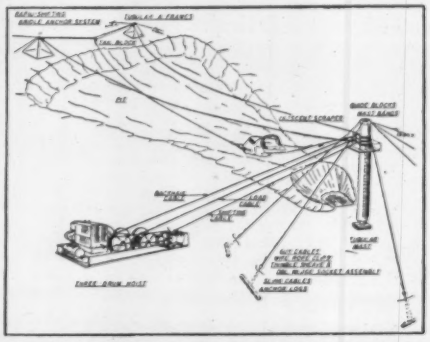
• **SOFT GROUND**—Sauerman DragScrapers work on surfaces where wheeled equipment cannot go and where mats are required to operate a dragline. The DragScraper digs and hauls its load quickly at ground level to hopper or pile. It carries a payload of two to three times its weight. You are not paying the power costs of a heavy machine with a handling capacity that is just a small portion of its weight.

• **NARROW SPACE**—A DragScraper can be operated through an opening no larger than the bucket's width. They are used successfully in culverts, sewers, tunnels, under bridges and buildings. Locations with limited space and head room . . . unworkable with other equipment . . . are handled efficiently and economically with a DragScraper.

• **DEEP WATER**—A Sauerman DragScraper will dig as much as 100 ft. below water . . . this is far below the safe depth that a dragline bucket can go without the danger of undermining and overturning the machine. Use a DragScraper for trenching, digging channels, lakes or for beach construction.

• **STEEP HILLS**—These are routine for a DragScraper. Material can be taken from anywhere on the bank. Digging from the top of the slope eliminates cave-ins—and the DragScraper gives an extra bonus by pushing additional material in front of the bucket on its way down the slope.

The Sauerman DragScraper operator and hoist is always located away from any hazardous area. It is designed for years of safe, continuous duty, handling bucket sizes up to 15-cu. yds. over spans to 1000 ft. or more.



THE SAUERMAN METHOD—*showing a basic DragScraper installation. Variations of this method are Sauerman engineered to handle the toughest digging jobs at the lowest cost per cu. yd.*

When you have a "tough-to-handle" job consult Sauerman engineers about Sauerman equipment and the Sauerman Method. Request Catalog A, also the Sauerman News and field reports.

SAUERMAN BROS., INC. 632 SO. 28th AVE. BELLWOOD, ILL.

Crescent Scrapers • Slackline and Tautline Cableways • Durolite Blocks

small boat marinas and commercial marine activities. $5,000,000. CD 10/30/56.

▲ **Virginia**—Appalachian Power Co., 40 Franklin Rd., Roanoke, 235 ft. high, Smith Mountain Hydro-Electric Dam and 90 ft. high dam near Leesville, both in Roanoke River, transmission lines and sub-stations. $45,000,000. Application has been made to FPC for license. CD 7/12/56.

▲† **West Virginia**—U. S. Eng., P. O. Box 2127, 237 4 Ave., Huntington, approx. 11 mi. single lane secondary state hys., incl. grading, paving, drainage and constr. 2 (240 ft. and 320 ft.) rein.-conc. bridges, Sutton Reservoir Proj., Elk River, $1,000,000-$2,000,000. Bids about January 1959; clearing reservoir area of all trees, brush and snags and disposing of all materials, $200,000-$500,000. Bids about October 1958. CD 9/5/57.

▲ **Alberta**—Prairie Farm Rehabilitation Admin., 4 floor, Motherwell Bldg., Regina, Sask., dam proj., Waterton River, Waterton, $12,000,000. 4 to 6 yrs. to complete. CD 12/3/43.

AIRPORTS

Fla., Fort Lauderdale—AIRPORT IMPRVS.—Broward Co., access road, aprons, parking area, etc., Broward County International Airport. Over $100,000. Rader & Assocs., Congress Bldg., Miami, consult. engrs.

▲† **O., Columbus**—AIR BASE IMPROVEMENTS—U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., primary runway, over $10,000,000, ordnance, storage base, $500,000-$1,000,000, Lockbourne Air Force Base. CD 9/17.

▲† **O., Dayton**—AIR BASE IMPROVEMENTS—U. S. Eng., 830 W. Broadway, Louisville, Ky., 4,500 sq. yd. rein.-con. paving for Aircraft Washrack and Taxiway access, with facilities for storage and disposal, $100,000-$200,000, Bids about October.

installation 240/416 V. electrical outlets in existing Alert, Readiness Hangars and ADC Apron, $100,000-$200,000. Bids about October.

1 story 5,520 sq. ft. addn. to heating plant and 100,000,000 BTU high temp. hot water boiler, $200,000-$500,000, Bids about September.

21,870 sq. yd. rein.-con. paving, 10 in thickness, apron operational, $200,000-$500,000, Bids about October.

2 story, 18,000 sq. ft. readiness crew bldg., incl. utilities, roads walks and parking area, $500,000-$1,000,000, Bids about November.

5 masonry and poured concrete ordnance storage bldgs., $500,000-$1,000,000, Bids about November.

relocation of flight test facilities, $100,000-$200,000, Bids about November.

1 four-pocket aircraft shelter, $200,000-$500,000, Bids about November.

3 story, 25,200 sq. ft. dormitory bldg. for airmen, $200,000-$500,000, Bids about November.

composite, industrial type bldg. incl. A/C constr. maint. armament and electronics shop, $1,000,000-$2,000,000, Bids about February.

1 story, 22,645 sq. ft. operations composite bldg., $200,000-$500,000, Bids about February, above work at Wright-Patterson Air Force Base. CD 3/12.

† **O., Mansfield**—MAINTENANCE SHOP—U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., 2-bay maintenance shop, 2,656 sq. ft., $100,000-$200,000, Bids about September, 1958.

† **O., Springfield**—ASSEMBLY WING—U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., 4,843 sq. ft. assembly wing addn. and 2,656 sq. ft. 2-bay maintenance shop, Army Reserve Centers, $200,000-$500,000. Bids about October.

▲† **O., Wilmington**—AIRPORT IMPROVEMENTS—U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va.,

apron, hangar access, $100,000-$200,000, bids October, 1958.

apron, operational $1,000,000-$2,000,000, bids October, 1958.

hydrant, jet fuel and truck fill stand, $200,000-$500,000, bids about December 1958.

base communications bldg., $100,000-$200,000, bids about February 1959.

operation squadron bldg., $100,000-$200,000, bids about February, 1959.

composite industrial bldg., $5,000,000-$10,000,000, bids about February, 1959.

readiness crew bldg., $500,000-$1,000,000, bids about December, 1958.

Avfuel storage, base, $100,000-$200,000, bids about December, 1958.

Mogas storage, base, $50,000-$100,000, bids about December, 1958.

cold storage warehouse (food), base, $50,000-$100,000, bids about March, 1959.

supply and equipment Warehouse, base, $100,000-$200,000, bids about February, 1959.

group headquarters, Air -Base, $200,000-$500,000, bids about February, 1959.

squadron headquarters, $200,000-$500,000, bids about February, 1959.

dormitory, airmen, $500,000-$1,000,000, bids about December, 1958.

dining hall, airmen, $200,000-$500,000, bids about December, 1958.

officers quarters, men, $200,000-$500,000, bids about January, 1959.

chapel with educational wing, $200,000-$500,000, bids about January, 1959.

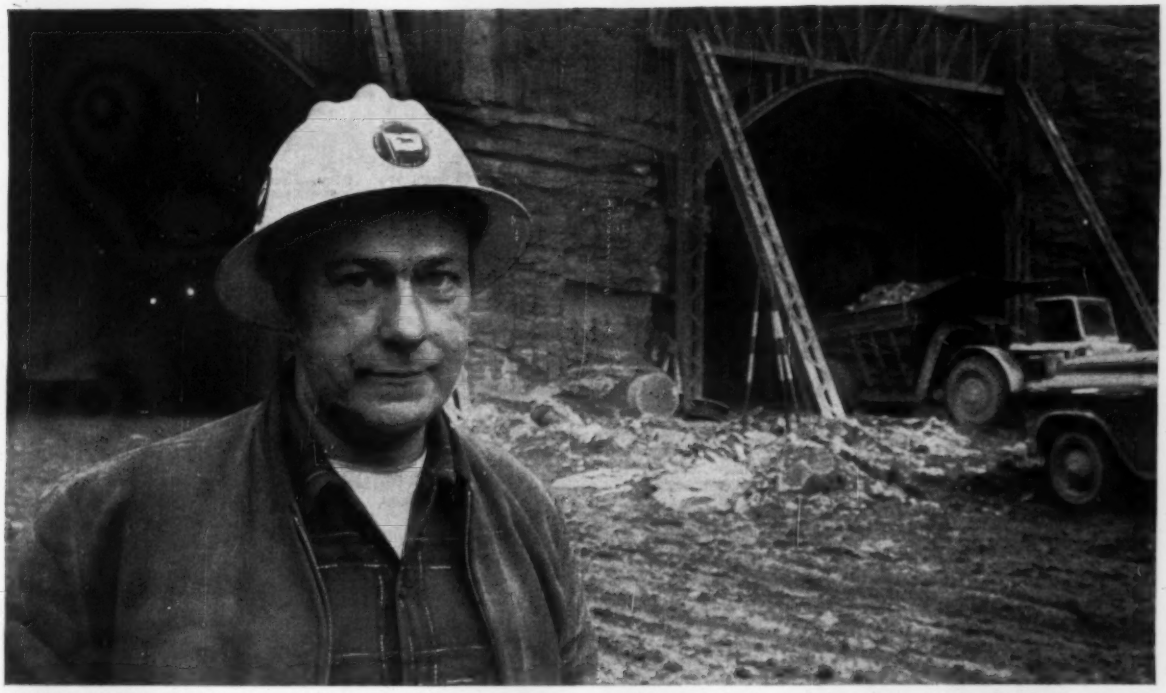
exchange sales store, $100,000, bids about February, 1959.

central heating plant, $500,000-$1,000,000, bids about November, 1958.

navigation aids, $100,000-$500,000, bids about January 1959, above work at Clinton County Air Force Base, CD 3/12.

† **W. Va., Martinsburg**—CONTROL TOWER AND RUNWAY BARRIERS—U. S. Eng., P. O. Box 2127, 237 4 Ave., Huntington, 1,970 sq. ft., approx. 52 ft. high

(Continued on page 162)

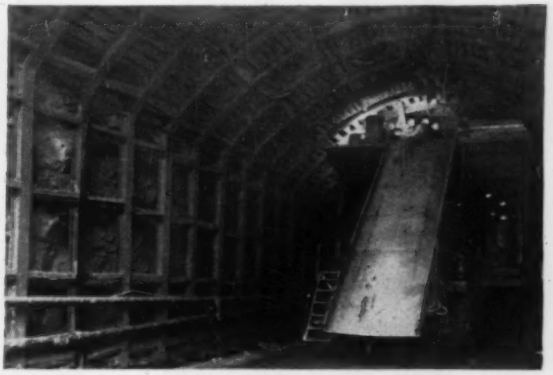


"AHEAD OF SCHEDULE," says Jim Sullivan, Tunnel Superintendent for Merritt-Chapman & Scott Corporation, contractors for the twin $17 million tunnels under Mt. Washington which will connect Pittsburgh's Golden Triangle to Penn-Lincoln Parkway. Improvements in steel posts, arch ribs, and channel lagging supplied by COMMERCIAL SHEARING & STAMPING increased tunnel support strength, made for safe, fast installation, and helped the contractor hole through twin .7 mile long tunnels ahead of schedule.

New design tops Ft. Pitt tunneling schedule

RAPID RATE OF PROGRESS—After shooting, as fast as muck in the tubes was removed, steel posts and roof sets were installed. Posts were 31 lb. 8" H-beams fitted with foot and butt plates accurately punched for quick field bolting. Roof ribs were pre-bent 40 lb. 8" H-beams. Precise fabrication of the 3800 tons of supports plus on-time delivery by COMMERCIAL were key factors in maintaining desired rate of progress.

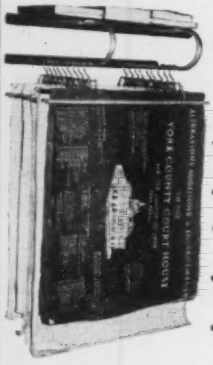
With over 30 years of experience in the design of supports for soft ground and rock excavations, COMMERCIAL's engineering staff is ready to offer you expert assistance with your particular shaft, surface or sub-surface tunnel problem. Write to Commercial Shearing & Stamping Company, Dept. E38 Youngstown 1, Ohio.



NEW IDEAS IN SUPPORT DESIGN—Drilling was done from a 37 ton truck-mounted jumbo which alternated in tunnel headings. Prewelded, clip-angle haunch blocks helped speed erection and made blocking easier. Posts, rib sets, lagging and angle spacers were delivered on the job completely fabricated, ready for fast field erection. Workmen on the jumbo quickly assembled the two-piece arch ribs, bolting them in place on 4' centers. Steel channel lagging was clipped to the outside flange of the arch ribs to provide between-rib roof support. Since all holes for field bolting were pre-matched, the entire support system was rapidly secured with speed-up, quick-acting bolts.

COMMERCIAL
shearing & stamping

The MODERN Blueprint Rack



FOR

MANUFACTURERS
CONTRACTORS
ARCHITECTS
ENGINEERS

- Mounts on any wall to leave floor clear
- No holes to punch in plans
- Holds up to 15 sets of largest plans
- Blueprint rack equipped with 10 plan holders
- Shelf holds specifications & reference books

The MODERN Blueprint Rack is the most compact & efficient Blueprint Rack ever introduced to the engineering field. To insert plans or additional sheets simply open & close spring clamps.

The MODERN Blueprint Rack is a compact unit which mounts on any wall and leaves floor space clear. Overall size 30" long, 18" deep & 8" high.

Order the **MODERN** Blueprint Rack Today. **$58.50** Including 10 Plan Holders

Additional Plan Holders **3.50** ea. Prepaid

MODERN BLUEPRINT RACK CO.

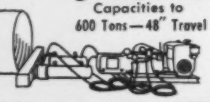
2504 42nd St., Pennsauken, N. J.

ELGOOD

Hydraulic & Mechanical

JACKS

Capacities to 600 Tons — 48" Travel



Jacking Equipment for
Pipe Pushing
Erection
Pile Driving
Pile Testing
Slip Forms
Tunnel Shields
Prestressed Concrete
many other applications

RENTALS — SALES — DESIGN

Large Stock — Immediate Delivery

Write for Job Fact Sheets

ELGOOD EQUIPMENT CORP.
373 Ten Eyck St., Brooklyn, N.Y.
HY 7-5445

DO WE HAVE YOUR COMPLETE ADDRESS?

Not unless you included your postal zone number when moving, subscribing or renewing subscriptions

(Continued from page 160)

structural steel frame, control tower and runway barriers, Air National Guard, Martinsburg Airport, $100,000-$200,000, Bids about October, 1958, CD 8/18/55.

PUBLIC BUILDINGS

▲† **Ala., Fort McClellan**—OPERATIONAL and TRAINING FACILITIES, etc.—U. S. Eng., 2301 Grant St., Mobile, operational and training facilities and hospital. $3,505,000.

▲† **Ala., Fort Rucker**—OPERATIONAL and TRAINING FACILITIES, etc.—U. S. Eng., 2301 Grant St., Mobile, operational and training facilities, administrative facilities, troop housing and utilities, $2,406,000. 400 units of housing, $4,000,000. CD 9/18/57.

▲† **Ariz., Fort Huachuca**—MAINTENANCE FACILITIES, etc.—U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. maintenance facilities, research, development and test facilities, administrative facilities, troop housing, operational and training facilities and utilities. $9,098,000. CD 8/30/56.

▲ **Ark., Little Rock**—MEDICAL RESEARCH—University of Arkansas Medical School plans by Erhart, Eichenbaum, Rauch & Blass, 201 Chester St., 9 story medical research bldg. for Medical School. $2,300,000. CD 1/3.

Colo., Delta—SCHOOL—Consolidated School Dist. No. 50, Read, plans by Wheeler & Lewis, 2215 W. 32 Ave., Denver, 1 story, 221,000 sq. ft. grade school, Over $344,000. CD 1/23/57.

▲ **Conn., New Britain**—SCHOOL—Town, Walnut Hill School, plans by Malmfeldt Assocs., 36 Pearl St., Hartford, for survey and preliminary sketches, High School, $1,500,000.

Conn., Newington—SCHOOL—Town, Town Hall, plans by Moore & Salisbury, 1007 Farmington Ave., West Hartford, South East School addn., 160 Superior Ave. $350,000. CD 6/19.

Conn., Prospect—SCHOOL—Town, Town Hall, school, $420,000.

Conn., South Windsor—SCHOOL—Town, Town Hall, High School. $400,000. Jacob Koton Assocs., 153 Homestead Ave., Hartford, consult. engrs.

Fla., Daytona Beach—CITY HALL—City, City Hall, plans by David A. Leete, Municipal Airport, city hall $350,000.

▲ **Fla., Daytona Beach**—SHOPPING CENTER—owner, c/o John H. Hart Co., archt.-consult. engr., 1102 34 St. N., St. Petersburg; 290,000 sq. ft. Belair Shopping Center. $1,000,000. R. L. Grundman, 1102-34 St. N., St. Petersburg, assoc. archt.

Fla., Tampa—SCHOOL—Hillsboro County Bd. P. Instruction, Sup. Courthouse, plans by Walker & Jackson, 312½ Twiggs St., elementary school, 109 Ave. and 22 St. $344,000.

† **Ill., Danville**—THEATRE—Veterans Admin., Munitions Bldg., Washington, D. C., plans by Schmidt, Garden & Erickson, 104 S. Michigan Ave., Chicago, zone 3, constr. theatre. $532,000. CD 9/16/55.

Ill., Shelbyville—NURSING HOME—County Bd. Supvrs., Court House, bond election Nov. 4, county nursing home, $700,000. CD 8/27.

† **Ind., Fort Benjamin Harrison**—HOUSING—U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill., troop and family housing. $783,000. CD 2/12/51.

Ind., Gary—SCHOOL—School City of Gary, 620 E. 10 Place, school, 19 Ave. and Louisiana St., $550,000; school, 21 Ave. and Jackson St. $520,000.

Iowa, Chariton—HOSPITAL—Lucas Co., Court House, plans by Thorson, Thorson & Madison, 219 Waterloo Bldg., Waterloo, 2 story county hospital bldg., $600,000.

▲† **Kan., Fort Leavenworth**—OPERATIONAL FACILITIES, etc. U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo., operational and training facilities and troop housing. $1,076,000.

▲† **Kan., Fort Riley**—OPERATIONAL FACILITIES, etc.—U. S. Eng., 1900 Federal Office Bldg., Kansas City, Mo., operational and training facilities and utilities. $1,084,000.

† **Ky., Fort Campbell**—OPERATIONAL FACILITIES, etc.—U. S. Eng., 306 Federal Office Bldg., Nashville, Tenn., operational and training facilities, maintenance, medical and administrative facilities. $847,000. CD 9/17.

Ky., Fort Knox—SCHOOL—Fort Knox Independent School Dist., plans by W. G. Crawford, 4030 Alton Rd., Louisville 7, high school. $500,000. Southern Engr. Co., 322 W. Jefferson, Louisville 2, Ky., consult. engrs.

Me., Portland—SCHOOLS—City, Supt. Schools, 389 Congress St., plans by John Calvin Stevens, 187 Middle St., King Junior High School addn., $350,000; plans by Wadsworth & Boston, 57 Exchange St., Portland, Me., Lincoln Junior High School addn. $350,000. Constr. 1959.

▲† **Maryland**—ENGINEERING—U. S. Eng., 6500 Brooks Lane, Wash. 25, D. C., cartographic engineering bldg., Army May Service. $1,913,000. CD 5/23/52.

▲† **Md., Aberdeen Proving Ground**—TROOP HOUSING, etc.—U. S. Eng., 24 St. and Maryland Ave., Baltimore, troop housing and utilities Aberdeen Proving Ground. $2,697,000.

† **Md., Fort Detrick**—TROOP HOUSING—U. S. Eng., First and Douglas Sts. N.W., Wash. 25, D. C., troop housing. $795,000. CD 10/8/51.

† **Md., Fort George G. Meade**—OPERATIONAL FACILITIES, etc.—U. S. Eng., 24 St. and Maryland Ave., Baltimore, operational and training facilities. $498,000. CD 8/30/56.

† **Mass., Ayer**—OPERATIONAL FACILITIES, etc.—U. S. Eng., 150 Causeway St., Boston, operational and training facilities, Fort Devens. $171,000.

Mass., Braintree—SCHOOL—Town, Supt. Schools, 10 Tremont St., elementary school. $350,000. Constr. 1959.

Mass., Somerville—SCHOOL—City, Highland Rd., Pope school addn. $350,000. Constr. 1959. CD 3/3/49.

▲† **Mich., Detroit**—ADMINISTRATIVE FACILITIES—U. S. Eng., P. O. Box 1027, Zone 31, administrative facilities at Detroit Arsenal. $5,666,000.

▲ **Mich., Iron Mountain**—SCHOOL—Bd. Educ. Iron Mountain Schools, defeated bonds June 9, senior high school addn. $1,450,000. New election in December. CD 5/8.

▲ **Mich., Livonia**—CIVIC CENTER, etc.—City, City Hall, bond election Nov. 4, civic center, incl. city hall addn., library, police and fire headquarters bldg., community center. $3,285,000.

Mich., Livonia—GARAGE, etc.—City, City Hall, bond election Nov. 4, garage and storage bldg. $366,000.

Minn., Raymond — SCHOOL — Bd. Educ. Independent School Dist. No. 346, $560,000 bond election Oct. 6, school addn. Patch & Erickon, 2815 Wayzata Blvd., Minneapolis, archts.

Miss., Cleveland—GYMNASIUM, etc.—Delta State College, Cleveland, plans by Mattingly & Biggers, 770 N. State St., Jackson, 2 story, 50,000 sq. ft. brick, concrete, etc. coliseum type combination gymnasium and field house, $500,000.

Miss., Magnolia—SCHOOL—South Pike School Bd., Magnolia, plans by Jones & Haas, Plaza Bldg., Jackson, school, Hy. 51. $550,000.

Miss., Tupelo—PLANT—Bd. Supervs. Lee Co. Court House, voted $250,000 bonds, corn meal mfg. plant, Hy. 45 south, about 1½ mi. south of here, Sunshine Mills, Red Bay, Ala., lessee. CD 8/21.

▲ **Mo., Springfield**—SCHOOLS—Reorganized School Dist. No. 12, Green County, $1,750,000 bond election Sept. 30 schools. CD 4/9.

▲† **N. J., Fort Dix**—HOUSING, etc.—U. S. Eng., 2635 Abbottsford Rd., Phila., Pa., troop housing and utilities, $3,749,000. CD 8/31/55.

▲† **N. J., Fort Monmouth**—HOUSING—U. S. Eng., 111 E. 16 St., New York 3, N. Y., 130 units housing, $3,000,000. CD 12/28/56.

▲† **N. M., Las Cruces**—OPERATIONAL and TRAINING FACILITIES, etc.—U. S. Eng., P. O. Box 1538, Albuquerque, operational and training facilities research, development and test facilities, medical facilities, troop housing, and community facilities, White Sands Missile Range, $7,931,000; 200 units housing, $2,000,000.

N. Y., East Meadow—LIBRARY—East Meadow Library Bd., 2306 Hempstead Turnpike, referendum vote Sept. 27, library, Front St. and Newbridge Ave. $440,000. CD 4/17.

▲ **N. C., Raleigh**—GENERAL ASSEMBLY—State of North Carolina, building to house State Legislature, (general assembly bldg.) $7,000,000.

▲ **O., Boardman**—SCHOOL—Bd. Educ., 7410 Market St. Youngstown, bond election Nov. 4, schools, $2,100,000. CD 11/14/55.

▲† **O., Cincinnati**—HOUSING—Cincinnati Metropolitan Housing Auth., 595 Armory St., 2 story bldgs., 170 rentals, housing addns., Beekman St. $1,700,000. Constr. in 1960. CD 1/6/50.

▲ **O., Columbus** — RADIATION THERAPY WING & OPTOMETRY BLDG.—O. Dpt. P. Wks., State Dpts. Bldg., plans by Garfield, Harris, Schafer, Flynn and Williams, 1740 E. 12 St., Cleveland, Zone 14, radiation therapy wing, University Hospital, Ohio State University, $1,800,000. CD 12/20/56. Plans by Potter, Tyler, Martin and Roth, 128 E. 6 St., Cincinnati, optometry bldg. addn., Ohio State University. $600,000.

▲ **O., Columbus**—STATE OFFICE BLDG.—Dpt. P. Wks., State Depts. Bldg., plans by Tully & Hobbs, 582 Oak St., Columbus, Bellman, Gillett & Richards, 1600 Madison St., Toledo. Potter, Tyler, Martin & Roth, 128 E. 6 St., Cincinnati, state office, $15,000,000.

▲ **O., Damascas**—SCHOOL—Bd. Educ., Mahoning School Dist., bond election Nov. 4, schools. $1,355,000.

▲ **O., Marietta**—HOSPITAL—Marietta Memorial Hospital, 4 story hospital addn. $1,200,000. CD 1/27/50.

O., Miami—SCHOOL—Local School Dist., bond election Nov. 4, high school, $900,000.

O., Sycamore—HIGH SCHOOL—Bd. Educ., Mohawk Twp. School Dist., Sycamore, bond election Nov. 4, high school bldg., remodel existing schools. $874,000.

O., Twinsburg—SCHOOL—Bd. Educ., plans by Fulton, DelaMotte, Darson & Nassau, 6014 Euclid Ave., Cleveland, Zone 3, elementary school, $710,000. Bids this fall; second section of Chamberlin High School. $650,000. CD 3/20.

† **Pa., Oil City**—ARMY RESERVE CENTER—U. S. Eng., New Federal Bldg., Pittsburgh, 1 story masonry structure without bsmnt. load bearing walls, concrete floor, 10,920 sq. ft., 1 story maintenance shop without basement, load bearing walls, concrete floor, 2,519 sq. ft. Army Reserve Center. $200,000-$500,000.

▲† **Pa., Phila.** — ATHLETIC CLUB, etc. — General Services Admin., 18th and F Sts. N. W., Wash., D. C., plans by Cronheim & Weger, 20 and Walnut Sts., Philadelphia, Pa., air-conditioning Penn Athletic Club Bldg. $1,961,000.

▲ **S. D., Sioux Falls**—COURT HOUSE—Comrs. Minnehaha Co., $100,000 bond election Nov. 4 and approve

spending $900,000 from general funds courthouse. $1,000,000. CD 12/7/55.

Tex., Beaumont — ADMINISTRATION — Lamar State College of Technology, administration. $350,000.

▲ Tex., Fort Worth—CITY HALL—City, City Hall bond election Nov. 18, 6 story city hall addn. $1,550,000. CD 8/18.

▲ Tex., Fort Worth—CIVIC AUDITORIUM—City, City Hall, bond election Nov. 18, civic auditorium $8,500,000. CD 8/18.

Tex., Fort Worth—LIBRARY—City, City Hall, bond election Nov. 18, 1 story addn. to main library and constr. 4 branch libraries. $850,000. CD 8/18.

▲ Tex., Fort Worth—MUSEUM—City, City Hall, bond election Nov. 18, Western Museum and Western Town, $1,250,000. CD 8/18.

▲ Tex., Fort Worth—POLICE STATIONS-JAIL—City, City Hall, bond election Nov. 18, police station and jail. $2,750,000. CD 8/18.

Tex., Fort Worth—SUB GARAGES—City, City Hall, bond election Nov. 18, sub-garages, $250,000. CD 8/18.

Tex., Houston—ARMORIES—Texas National Guard, Camp Mabry, Austin, armory No. 1, $323,000; armory No. 2, $264,000, Tee Anchor Blvd.

Tex., Weslaco—LABORATORY—Texas A & M College System, College Station, plans by William C. Baxter, Pioneer Blvd., laboratory, 9 Sub-Sta. No. 15, Agricultural Experiment Station. $110,000. R. C. Rippstein, Transit Tower, and Geo. R. Rhine, 101 N. McCullough Ave., San Antonio, consult. engrs.

† Utah—BUILDINGS, etc.—National Park Service, Dpt. of Interior, 19th and C. Sts. N.W., Wash. 25, D. C., buildings and utilities, Arches National Memorial. $218,400. (funds appropriated).

Wis., Menomonie—DORMITORY—Wisconsin State Colleges Bldg., Corp., Madison, plans by Schubert, Sorensen & Assocs., 308 Hoeschler Bldg., La Crosse, 3 story, bsmnt., 38 x 236 ft. men's dormitory, $600,000.

▲ Wis., Neenah—SCHOOLS—Bd. Educ., Neenah elementary school, $600,000, for use in 1963; plans by Perkins & Will, 309 W. Jackson Blvd., Chicago, Ill., high school addn., $600,000, for use in 1961; elementary school, $500,000, for use in 1960; Junior High School, $960,000, for use in 1961.

Wis., Oshkosh—DORMITORY—Wisconsin State Colleges Bldg. Corp., Madison, plans by Schubert, Sorensen & Assocs., 308 Hoeschler Bldg., La Crosse, 3 story, bsmnt., 38x236 ft. dormitory, $600,000.

Wyo., Casper — OFFICE — State Employment Security Comn., plans by Goodrich & Willing, 722 E. Yellowstone St., 3 story and bsmnt., 40,704 sq. ft. office bldg. $750,000.

Wyo., Cheyenne—HOSPITAL—Laramie Co., voted $490,000 bonds Aug. 19, county Memorial hospital addn. CD 7/18.

▲ Alta., Calgary—COURT HOUSE—Provincial Govt., Legislative Bldg., Edmonton, 6 story, stone, steel frame court house, $3,000,000. Strong, Lamb & Nelson, 504 4 St. S.E., consult. engrs. CD 2/10.

▲ Alta., Edmonton—HOSPITAL—Royal Alexandra Hospital Bd. Plans by Rule, Wynn & Rule, 11422 Jasper Ave., hospital annex, $5,800,000. Rensaa & Minsos, 9130 Jasper Ave., consult. engrs.

Alta., Lethbridge—CIVIC AUDITORIUM—City, City Hall, civic auditorium, $350,000.

Ont., Fort William—HIGH SCHOOL—Bd. Educ., plans by Mickelson, Fraser and Haywood, 16 Ave. at Memorial Ave., Port Arthur, high school, James Ave. and Walsh St., $500,000. CD 12/20.

Ont., Kingston—PENITENTIARY—Dpt. Justice, Penitentiaries Branch, Ottawa, reconstruction of penitentiary, $350,000.

Ont., Toronto—HOSPITAL—Dpt. P. Wks., Parliament Bldgs., laundry bldg., hospital expansion, Ontario Hospital, 999 Queen St. $485,000.

COMMERCIAL BUILDINGS

Conn., Hartford—MOTOR HOTEL, etc.—Shore Realty Co., 410 Asylum St., plans by Kane & Fairchild, 734 Asylum Ave., 6 story Motor hotel, restaurant, 424-448 Asylum St. $600,000. Jacob Koton Assocs., 153 Homestead Ave., consult. engrs. CD 7/24.

Conn., Stamford—SCHOOL—Temple Sinai, 54 Grove St., plans by Sherwood, Mills & Smith, 65 Broad St., religious school bldg. and sanctuary Lakeside Dr. $350,000.

▲ Del., Wilmington—HOSPITAL BLDG.—Wilmington, Del. General Hospital, Brom & Linden St., modernize and air condition main hospital, $1,250,000; Doris Memorial Unit $400,000; maternity bldg., remodel, $344,000. CD 10/16/56.

▲ D. C. Wash.—HOSPITAL, etc.—Sibley Hospital, 1140 North Capitol St., hospital and nurses home, Loughboro Rd. and MacArthur Blvd. N. W. $8,748,000. CD 7/22/52.

D. C., Wash.—SCHOOL—Archdiocese of Washington, 1721 Rhode Island Ave. N. W., plans by Johnson & Bouti, 1417 22 St. N. W., St. Anthony's School, Lawrence and 10th Sts. N. E. $350,000.

Fla., Fort Myers—SHOPPING CENTER—Boulevard Plaza Shopping Center, c/o Morman M. Giller & Assocs., archts., 975 Arthur Godfrey Rd., Miami Beach, 1 story, 150 x 600 ft., 1 story, 160 x 170 SB-S (irreg.) McGregor Blvd. and Altamont Ave. $450,000.

Fla., Ocala—SHOPPING CENTER—Owner, c/o John H. Hart Co., archt. consult. engr. 1102 34 St. N., St. Petersburg, 70,000 to 100,000 sq. ft. shopping center, $400,000. Robert L. Grundman, 1102 34 St. N., St. Petersburg, assoc. archt.

EDDY

One dependable source for—

Fire Hydrants • Indicator Posts
Gate Valves • Check Valves
Cutting-In Valves • Foot Valves
Tapping Valves • Air Valves
Tapping Sleeves • Shear Gates

Eddy manufactures a complete line of AWWA fire hydrants, iron body valves, and accessories for municipal and industrial service. Special valves can be furnished for unusual applications. Ask for our catalog.

EDDY VALVE COMPANY
A Subsidiary of James B. Clow & Sons, Inc.
WATERFORD NEW YORK

cut concrete costs up to 6% . . . eliminate call-backs . . .

Compact sub-base with Maginniss POWR-PACTORS!

Maginniss *vibratory* compaction assures uniform density of sub-base . . . eliminates voids . . . prevents loss of mortar . . . reduces concrete required up to 6%! And, compacted sub-base stops slab settling and cracking . . . eliminates expensive call-backs for repairs.

Find out how Maginniss Powr-Pactors will cut concrete, labor and call-back costs on all your jobs. See your Maginniss distributor today! Maginniss Power Tool Company, 154 Distl Avenue, Mansfield, Ohio.

Maginniss Power Tool Company
154 Distl Ave., Mansfield, Ohio
Yes, I want to know more about the Powr-Pactor for compacting sub-base.
name _____
address _____
city _____ zone ____ state ____

AA-7622

MODEL PP-18 POWR-PACTOR. Up to 7,000 vpm, 4,000 lbs. adjustable force, gasoline powered.

Ga., Dalton—MOTOR COURT—Dalton Realty Co. of Ga., motor court, $500,000.

▲ **Ill., Antioch**—HOTEL-MOTEL—Geo. Diamond Charcoal Steakhouse, Inc., Rte. 59, plans by David M. Ladshoff, 523 Genesee St., Waukegan, 300 x 1385 ft. hotel-motel, reloc. golf course, skate rink, park lot for 300 cars, swim. pool, $3,000,000.

Iowa, Davenport—DORMITORY—St. Ambrose College, Very Rev. Msgr. William J. Collins, pres., 518 W. Locust St., plans by Wm. F. Bernbrock, Fifth Ave. Bldg., Moline, Ill., 4 story dormitory, $920,000. CD 1/31.

▲ **Ky., St. Matthews**—APARTMENT—Manufactures Exchange Bldg., Inc., Louisville Trust Bldg., Louisville, Zone 2, plans by D. X. Murphy & Bros., 707 Louisville Trust Bldg., 5th and Market Sts., Louisville, Zone 2, 8 story, 119 unit, brick, aluminum apartment incl. parking area in bsmnt. $1,200,000.

Md., Baltimore—HOUSES—Hatton Homes, Inc., 3800 Southern Cross Dr., Zone 7, plans by Benjamin Brotman, 2118 Maryland Ave., Zone 18, 53 two story 19 x 32 x 25 ft. brick-frame houses, row-type-groups, 6800 block Fairlawn Ave. $583,000.

Mich., Plainwell—HOSPITAL—Crispe Hospital, plans by J & D Daverman Co., 924 Grandville, Grand Rapids, Mich., hospital addn. $450,000.

▲ **Minn., St. Paul**—Y. W. C. A.—Y. W. C. A., 123 East Fifth St., Plans by G. Dimond Assocs. Inc., 416 Endicott-on-Fourth Bldg., St. Paul, Minn., 7 story, bsmnt. Y. W. C. A. East Kellogg Blvd. and Minnesota St., $1,000,000.

▲ **Mo., Kansas City**—SHOPPING CENTER, etc.—J. E. Dunn Investment & Development Co., Reliance Bldg., Kansas City, Mo., plans by Herbert E. Duncan, 4049 Penn., Kansas City, Mo., shopping center, Swope Parkway between College and Agnes, incl. 374-car parking. $850,000; 50-unit (garden type) apartment, 49th St. $400,000.

Mo., Oregon—HOSPITAL—Memorial Hospital Assoc. of Holt County, plans by Hewitt & Royer, 607 Westport Rd., Kansas City, Mo., 35-bed hospital. $410,000.

▲ **Mo., St. Louis**—OFFICE—Harold Koplar, Chase Hotel, 212 N. Kingshighway, St. Louis 8, 11 story office, York Ave. between Lindell Blvd. and Maryland Ave. Over $2,500,000.

▲ **Mo., St. Louis**—DORMITORY—Washington University, Skinker and Lindell Blvds., Zone 5, plans by Jamieson, Spearl, Hammond & Grolock, 1876 Arcade Bldg., Zone 1, 11 story, ground floor dormitory for Medical School, Scott Ave. $2,142,000. John D. Falvey, 316 N. 8 St., Zone 1, mechanical engr. Wm. C. E. Becker, 411 N. 7 St., Zone 1, structural engr. CD 3/1/55.

▲ **N. J., East Orange**—APARTMENT—Munn Avenue Corp., 44 Munn Ave., East Orange and 833 Chamberlain Ave., Perth Amboy, plans by Irwin Gerber, 11 Commerce St., Newark, 10 story, 168 family apartment, South Munn Ave., $3,000,000. CD 2/7, under David Aranow.

▲ **N. J., Newark**—HOTEL—Knott Hotels Corp., 575 Madison Ave., New York, N. Y., hotel addns., Park Place. $6,000,000.

N. J., New Shrewsbury—HOUSES—Douglas Downs, River Ave., 20 houses, River Ave. and Riverdale Rd. $450,000.

N. J., New Vernon—CHURCH—Archdiocese of Paterson-Parish Christ the King, Millbrook Rd., brick church and rectory, Millbrook Rd., Harding Twp., $345,000.

▲ **N. J., Nixon**—SHOPPING CENTER—Philip J. Levin, U. S. Hy. 22, North Plainfield, 125,000 sq. ft. shopping center opposite Lahiere Park, Edison Twp., $1,000,000.

N. J., Woodbury (Gloucester P.O.)—BOWLING ALLEY—Owner, c/o Frederick Thompson, 1 S. Broad St., plans by Lester H. Weckesser, 16 Montana Ave., Ellisburg, bowling alley, Old Broadway, $350,000. Bids soon.

N. J., Woodbury Heights—BOWLING ALLEY—Len Bleznick, 814 N. Broad St., Woodbury, plans by Lester H. Weckesser, 16 Montana Ave., Ellisburg, bowling alley, $344,000. Bids soon.

▲ **N. Y., Brooklyn**—HOUSING—Glick Development Co., c/o Lama, Pruskauer & Prober, archts., 395 Pearl St., Zone 1, middle income cooperative housing, two 16 story bldgs. for 320 families, Shore Parkway and Bay 44 St. to be called "Contello Towers". $5,000,000.

▲ **N. Y., Brooklyn**—APARTMENTS—Harboro Assocs. Inc., 17 Neptune Ave., plans by Morris Rothstein & Son, 186 Joralemon St., Zone 2, 6 story apartment for 163 families and 33-car garage, 120 Caton Ave. $1,500,000.

▲ **N. Y., New York**—APARTMENT—Fisher Bros., 6 E. 45 St., Zone 17, plans by Emery Roth & Sons, 575 Madison Ave., Zone 22, apartment development, on site bounded by Lexington Ave., 3 Ave., E. 68 and E. 69 Sts. $10,500,000.

▲ **N. Y., New York**—APARTMENT—Spring Holding Corp., 16 Court St., Brooklyn, Zone 2, plans by Philip Birnbaum, 12 E. 48 St., New York 17, N. Y. apartment, 435 W. 57th St. $1,285,000.

▲ **N. Y., New York**—OFFICE—Stahl Equities Corp., 1657 Broadway, 53 story office known as "277 Park Ave" on block bounded by Park and Lexington Aves., 47 and 48th Sts. $45,000,000.

N. C., Greensboro—DORMITORY—Agricultural & Technical College of North Carolina, women's dormitory. $500,000

▲ **O., Cincinnati**—HOSPITAL—Jewish Hospital, Burnet Ave., plans by Potter, Tyler, Martin & Roth, 128 E. 6 St., 9 story hospital bldg. $2,000,000. Constr. in 1959. CD 9/15/55.

▲ **O., Cleveland**—LIBRARY—Western Reserve University, 10940 Euclid Ave., Zone 6, electronic library bldg., $1,600,000. CD 5/31/50.

▲ **O., West Carrollton**—HOMES—Son Development Co., Elmer Son, pres., 7825 N. Dixie Hy., Dayton, 245 homes south of Bridle Homes Estates. $2,300,000.

Pa., Cheltenham—CHAPEL AND SCHOOL—Presentation BVM Roman Catholic Church, plans by Getz, Kain & Hooven, Lansdowne, chapel and school bldg. $344,000. Bids soon.

▲ **Pa., Media**—HOSPITAL—Riddle Memorial Hospital, 5 W. Front St., plans by Lawrie & Green, 321 N. Front St., Harrisburg, Pa., hospital. $3,000,000. CD 12/12/56.

S. C., Columbia—BANK—Commercial Bank & Trust Co., 1200 Main St., bank. $500,000.

Tex., Corpus Christi—SHOPPING CENTER—Guy I. Warren, Jack Modesetti, & F. W. Carr, Wilson Tower Bldg., plans by Bartlett Cocke, 3601 Broadway Ave., San Antonio, shopping center, $450,000.

Tex., Dallas—AUDITORIUM, etc.—Danieldale Baptist Church, 9308 S. Beckley, plans by Adams Bliss, Burt Bldg., auditorium-education. $350,000.

Tex., Dallas—DWELLINGS—Centex Constr. Co., 4606 Greenville St., 28 dwellings, Oaklawn Hills subdivision, $378,000; 29 dwellings, $348,000.

▲ **Tex., Fort Worth**—TRAFFIC CONTROL CENTER—General Services Admin., 114 Commerce St., Dallas, constr. and lease 51,000 sq. ft. Air Control Rte. Traffic Control Center Bldg., with 2,100 sq. ft. engine room and garage in Tarrant Co. for CAA. $1,080,000.

Tex., Fort Worth—CHAPEL—Greenwood Cemetery, 415 N. P. Anderson Blvd., plans by Herman G. Cox, 415 N. P. Anderson Blvd., chapel. $300,000-$350,000. Bids in September.

▲ **Tex., Houston**—SUPERMARKET, etc.—Joe M. Huffington, JMH Supermarket, 3714 Richmond Rd., supermarket and other stores on 11½ acres. Spring Branch. $1,000,000.

Tex., Houston—DWELLINGS—Leo E. O'Neal, Builder, 3908 Main St., Houston, 18 dwellings, Braeburn Glen. $365,000.

▲ **Tex., Houston**—CHURCH—Sharpstown Baptist Church, 2320 Willowick St. or 1211 Hyde Park Blvd., plans by Frank C. Dill, 1211 Hyde Park Blvd., church, $1,000,000. CD 7/23.

Tex., San Antonio—DWELLINGS—Carl Gaskin Builder, Inc., 6651 Callghan Rd., 26 dwellings in Glen Oaks Subdivision. $367,725.

Tex., San Antonio—DWELLINGS—H. P. Orts Constr. Co., 939 Rittiman St., San Antonio, 33 dwellings, $371,000; 29 dwellings, $348,175, North East Park Subdivision.

▲ **Tex., San Antonio**—DWELLINGS—Quincy Lee Constr. Co., 211 Olmos Dr. West, 42 dwellings, $375,000; 40 dwellings, $356,000; 38 dwellings, $346,500, in Skyline Park Subdivision.

Tex., San Antonio—DWELLINGS—Edgar Von Scheele & Co., Inc., 4418 Newcome St., 24 dwellings in Glen Oaks Park Subdivision. $363,500.

▲ **Tex., South Houston**—DWELLINGS—Brown & Lampkinn, 302 A St., Houston, 36 dwellings, $360,000; 30 dwellings, $351,750; 34 dwellings, $345,500. Constr. early 1959.

Tex., South Houston—DWELLINGS—Ideal Building Co., 2300 Sakowitz St., Houston, 24 dwellings. $368,150.

Tex., South Houston—DWELLINGS—Soutex Constructors, South Houston, 32 dwellings. $371,000.

▲ **Alta., Edmonton**—EXHIBITION BLDG. & RACE HORSE BARNS—Edmonton Exhibition Assoc. Ltd., Exhibitions Grounds, plans by K. D. Stanley & Co., 12306 Jasper Ave., exhibition bldg., $2,000,000; plans by Diamond, Dupuis & Dunn, 10740 Jasper Ave., race horse barns, exhibition grounds, $500,000.

Ont., Toronto—OFFICE, etc.—Consolidated Bldg. Corp., 89 Avenue Rd., plans by W. Shulman, 1170 Bay St., 8 story, 50 x 80 ft., rein.-con. office and stores, 107 Avenue Rd. $400,000.

INDUSTRIAL BUILDINGS

▲ **Conn., Greenwich**—PLANT—United Aircraft Corp., 400 Main St., East Hartford, 300,000 sq. ft. plant for Norden Div. $6,000,000.

Conn., Newington—WAREHOUSE—etc. Conn. Light & Power Co., Selden St., Berlin, plans by Chas. T. Main, Inc. consult. engr. archt. 80 Federal St., Boston, Mass., warehouse and service bldg. $100,000.

Fla., Hialeah—WAREHOUSE—Harry Elson, 1009 E. 30 St., plans by R. J. Schneider, 1431 Famingo Way, 1 story, 112x251 ft. CB-S warehouse, W. 20 St. between W. 4 and W. 8 Aves.

Ga., Columbus—PLANT—Columbus Industrial Development Corp. plant to Liberty Coach Co., Inc., Bremen, Ind. $300,000.

Ill., Elk Grove—PLANT & OFFICE—Cooper Industries, c/o Robert Babbin & Assoc., 3744 W. North Ave., Chicago, archts., 1 story, 12,000 sq. ft., brick manufacturing plant and office bldg., center industrial district, $150,000.

▲ **Ill., Glenview**—LABORATORY—National Dairy Products Corp., 75 E. Wacker Dr., Chicago, plans by Childs & Smith, 20 N. Wacker Dr., Chicago, laboratory expansion, Waukegan Rd., south of Glenview Rd. $3,000,000.

Mass., Burlington—FACTORY—Microwave Assoc. Inc., South Ave., factory addn. $200,000. Symmes, Maini & Hrynlewicz, 240 Sidney St., Cambridge, Mass., engrs. Constr. late 1958.

N. H., Keene — INDUSTRIAL — Industrial Park Auth., State House Annex, Concord, plans by Anderson, Nichols & Co., 10 Eastman St., Concord, industrial bldg., Industrial Park, Opiteal Ave. $310,000. Constr. 1958.

N. Y., Brooklyn—WAREHOUSE, etc.—V. LaRosa & Sons, 473 Kent Ave., Brooklyn 1, plans by Frank S. Parker Assocs., 205 E. 43 St., New York 17, N. Y. 2 story warehouse and office, 528-42 Wythe Ave. $300,000.

N. C., Greensboro—PLANT—H. W. Lay & Co., Inc., Peachtree Industrial Blvd., Atlanta, Ga., manufacturing and distribution plant, $400,000.

▲ **Ont., Beachville**—PLANT—Chemical Lime Ltd., Beachville, vertical shaft kiln lime plant addn., $1,000,000.

Ont., North Bay—TERMINAL—Imperial Oil Ltd., 111 St. Clair Ave. W., Toronto, distribution terminal and district office. $500,000.

UNCLASSIFIED

† **Alaska** — BUILDINGS & UTILITIES — National Park Service, Dpt. Interior Bldg., 19 & C Sts. N. W., Wash. Zone 25, D. C., buildings and utilities, Mt. McKinley, $155,300 appropriated.

† **Arizona**—PARK ROADS—National Park Service, Dpt. Interior, 19 and C Sts. N. W., Wash., D. C., buildings and utilities, Organ Pipe Cactus National Monument, $238,600 appropriated.

† **Arizona**—PARK ROADS—National Park Service, Dpt. Interior, 19 and C Sts. N. W., Wash, D. C., buildings and utilities, water, sewer and underground power sys. for campground and trailer courts, Mather area and miscellaneous areas, Grand Canyon National Park, 856,000 appropriated. CD 10/2/57.

† **Arizona**—ROADS—National Park Service, Dpt. Interior, 19 and C Sts. N. W., Wash., D. C., buildings and utilities, Montezuma Castle National Monument, $115,400 appropriated. CD 9/14/56.

† **Arizona**—ROADS—National Park Service, Dpt. Interior, 19 and C Sts. N. W., Wash., D. C., buildings and utilities, Coronado National Memorial, $117,300 appropriated. CD 9/14/56.

▲ **Colo., Colorado Springs**—PARK, etc.—City, Municipal Bldg., park and recreation system. $2,778,000.

Conn., Bridgeport—AIR CONDITION—Genungs, Inc., 47 S. 5th Ave., Mount Vernon, N. Y., air condition Howland Dry Goods Co. Store, 1049 Main St. $164,000.

Conn., Greenwich—GOLF COURSE—Bernard Gray, Eastchester, N. Y., golf course, King St. $100,000.

Del., Bellefonte — RECREATION CENTER — Bellefonte, Del., Town Comm., park and recreation center, $73,000.

Ill., Rockford—PARKING LOT—City, City Hall, plans by Lippincott & Beckman, 520 N. Main St., ramp structure with deck for city parking lot, $275,000. Bids in September. Lane Mashaw, 126 S. 1st Ave., owners staff engr.

▲ **N. C., Greensboro**—TELEVISION STATION—Jefferson Standard Life Insurance Co., Security Bank Bldg., television Station, $1,500,000.

† **North Dakota**—BUILDINGS & UTILITIES—National Park Service, Dpt. Interior, Interior Bldg. 19 & C Sts. N.W., Washington zone 25, D. C., buildings and utilities, $393,000 appropriated. CD 5/11.

† **Ohio**—DEFENSE AREA IMPRVS.—U. S. Eng., 237 Fourth Ave., Huntington 19, W. Va., Cincinnati Defense Area, water supply, $200,000-$500,000, bids about November; sewage treatment, $200,000-$500,000, bids about November.

▲ **Ohio**—RADAR STATION—U. S. Eng., 237 Fourth Ave., Huntington 19, W. Va., Radar Station, Cleveland Defense Area, 1 story, 2,500 sq. ft. concrete, masonry bldg. with rein.-con. transmitter room and 1 story, 288 sq. ft. concrete, masonry generator bldg. $50,000-$100,000. Bids about February.

† **Oregon**—BUILDINGS AND UTILITIES—National Park Service, Dpt. Interior, Interior Bldg., 19 & C Sts., Wash., Zone 25, D. C., buildings and utilities, Mound City Group National Monument, $161,500 appropriated.

▲† **Pa., Phila.**—HISTORIC, etc.—National Park Service, Dpt. Interior, 19th and C Sts. N.W., Wash. 25, D. C., restoration of historic bldgs., demolition of bldgs., constr. service bldg., extend utilities and landscaping, Independence National Historical Park. $1,500,000 appropriated. CD 11/28/51.

† **South Dakota**—BUILDINGS, etc.—National Park Service, Dpt. of Interior, 19th and C Sts. N. W., Wash. 25, D. C., buildings and utilities, Mt. Rushmore National Memorial. $158,100. (funds appropriated).

Texas—RURAL DISTRIBUTION LINES—South Plains Electric Cooperatives, Lubbock, 227 mi. distribution lines electric service to 787 irrigation pumps, 63 mi. tie lines, 10 mi. 69KV trans. lines conversion 73 mi. distr. lines sub-station-transformers, $858,000. CD 12/3/56.

▲ **Wash., Pasco**—COLISEUM—Columbia Coliseum Corp., c/o L. C. Grey, plans by Whitehouse, Price, DeNeff & Deeble, Hutton Bldg., Spokane, 200 x 300 ft. coliseum, $3,000,000. Work may begin next year. CD 7/8/57

▲ **Wis., Milwaukee**—CONSERVATORY—Milwaukee Co. Park Comm., plans by D. L. Grieb, 316 E. Silver Spring Dr., conservatory, $2,419,291. CD 6/27/57.

▲ **Que., St. Lambert**—PARKS—City, City Hall, St. Lambert and St. Lawrence Auth., 685 Cathcart St., Montreal, plans by McFadzean-Everly (Canada) Ltd., landscape archts, 6555 Cote des Neiges Rd., Montreal, parks, playgrounds, swimming pools, club, etc. along St. Lawrence Seaway Section in city, $3,500,000.

Here are some of the fine MARS drafting products, imported from West Germany, made to meet the highest professional standards. ● Bright-hued LUMOCHROM pencils come in 24 colors for color-coded drafting and perfect reproduction. ● LUMOGRAPH graphite drawing pencils come in 19 degrees. Some degrees available with erasers, some with special chisel points. ● TECHNICO lead holders for color and black graphite drawing have new sure-hold finger grips, with degree markings for quick identification. Also available with clips for pocket use. ● NON-PRINT pencil and leads let you make notes and sketches that will not reproduce. ● Pencil sharpeners come in STANDARD and "DRAFTSMAN" models; latter with adjustable point length feature.

your brain's best friends

Thoughts needn't struggle over mechanical hurdles to get down on paper. Tracings convey your ideas and designs most clearly when your drafting is concise and sharp. When it reproduces perfectly.

Like thousands of your colleagues, you will find the shortest distance between idea and execution in MARS drafting products. They are your brain's best friends.

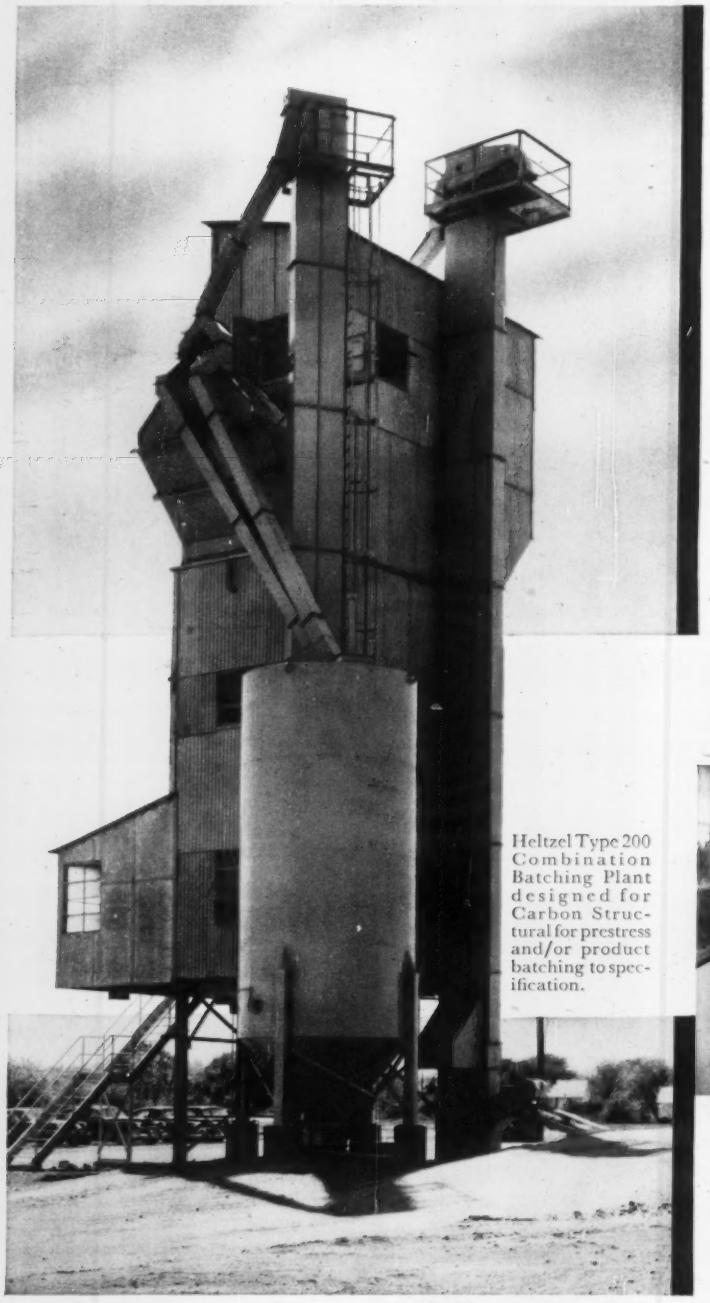
For the engineer, architect and draftsman who demands direct and accurate expression, *it's MARS— clear across the board!* Ask for these quality drafting aids at your dealer's.

MARS

J. S. STAEDTLER, INC.

HACKENSACK, NEW JERSEY

Carbon Structural, too, specifies HELTZEL packaged prestress plant



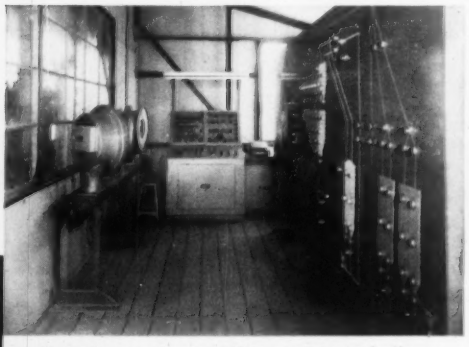
Heltzel Type 200 Combination Batching Plant designed for Carbon Structural for prestress and/or product batching to specification.

Coded controls, turbine mixer design, features of new specification plant

Fast, fully automatic, versatile . . . reasons why so many leading prestress concrete product manufacturers are specifying Heltzel Packaged Prestress Batching Plants.

Carbon Structural Concrete of Youngstown, Ohio, recently set into operation the first specification prestress plant designed to incorporate the new turbine type mixer. It is a fully automatic plant with a central control requiring but a single operator. Material handling controls are coded to pin-point each operation as it occurs. A Clary printer scans and prints three scale weights on a single tape and identifies each batch. Aggregate and cement loading are push button automatic. All weighing and metering equipment meets or exceeds Corps of Engineers specifications.

If you are considering batching equipment for prestress, highway construction or ready mix, make sure you have the last word on the finest plants designed today—Heltzel Automatics.



Central control area. All operations, including loading, are fully push button automatic.

THE HELTZEL STEEL FORM & IRON CO. • WARREN, OHIO

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

September 22 Connecticut September 23 Massachusetts

BUILDINGS—BA

Conn., **Meriden**—SCHOOL—BA 10/9—Town, Bd. Educ., 22 Liberty St., Lincoln Junior High School addn., alterations. $800,000. Ebbets, Frid & Prentice, 862 Asylum Ave., Hartford, archts. A. John Macchi, 57 Farmington Ave., Hartford, engr. CD 6/12/57.

HEAVY CONSTRUCTION—LB & CA

MAINE—State Hy. Comn., State Office Bldg., Augusta, Me.—**Warren Bros. Roads Co.**, Fairfield, Me., CA **$196,800** (4 bidders) b. conc. 8.95 mi. FAP No. F-050-3(8), Contr. No. 3, Grand Isle-Madawaska;

Me.—**Farrin Bros. & Smith**, Brighton, Me., CA **$196,120** (6 bidders), b. conc. and bridge 1.535 mi. FASP S-0241 (3), Harmony.

▲† **Blount Bros. Constr. Co.**, 79 Commercial St., Montgomery, Ala., CA **$3,466,869**, est. $3,577,081, SAC Missile Facility, Ethan Allen Air Force Base, ENG-19-016-59-6, WINOOSKI, VT. U. S. Eng., 150 Causeway St., Boston, Mass. Bids Aug. 19. CD 8/21, under LB.

MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, bids opened 9/3,

Mass.—**M. DeMatteo Constr. Co.**, 200 Hancock St., Quincy, Mass., LB **$553,711**, est. $667,000, Chapter 90 hy. and bridge, Dover St. Bridge, Boston;

Mass.—**Leo Constr. Co., Inc.**, 1083 School St., Webster, Mass., LB **$214,134**, est. $267,232, hy. work, Rte. 12, Oxford. CD 8/28.

BUILDINGS—LB & CA

Claremont General Hospital, Elm St., Claremont, N. H., rejected bids Aug. 20, HOSPITAL addns., alterations, Elm St., CLAREMONT, N. H. LB **$847,000**. CD 8/27, under LB.

D. A. Sullivan & Sons, Inc., 82 North St., Northampton, Mass., LB **$488,875**, DORMITORY No. 16, Campus, AMHERST, MASS. University of Mass., Alumni Assoc., Amherst, Mass. Bids Sept. 3. CD 8/20;

M. J. Walsh & Sons, Inc., 14 Shawmut Ave., Holyoke, Mass., LB **$494,120**, DORMITORY No. 17, Campus (Amherst, Mass.).

Owner, c/o LaCrois & Triplett, Evergreen Way, Belmont, Mass., Separate Contracts, **$358,000**, RESIDENTIAL DEVELOPMENT "Hillcrest" (3rd section) 10 houses, BELMONT, MASS.

Robert Stone Co., 44 West Foster St., Melrose, Mass., Separate Contracts, **$350,000**, RESIDENTIAL DEVELOPMENT, "Apple Hill" (3rd section), 11 houses, Lowell St., LYNNFIELD, MASS.

Hillcrest Development Corp., corner Nebo St. and Rte. 109, Medfield, Mass., Separate Contracts, **$350,000**, RESIDENTIAL DEVELOPMENT "Belknap Estates" 14 houses, Nebo St., MEDFIELD, MASS.

Ralph O. Porter, 7 Southgate Rd., Wellesley, Mass., Separate Contracts, **$350,000**, RESIDENTIAL DEVELOPMENT "Westgate in Wellesley" (3rd section), 10 houses, Elmwood Rd., WELLESLEY, MASS.

M. S. Kelliher Co., 294 Washington St., Boston, Mass., LB **$517,891**, M-209, Contr. No. 5, STOREHOUSE, State Hospital, WORCESTER, MASS. Commonwealth of Mass., Dpt. Mental Health, c/o Div. Bldg. Constr., 38 Chauncy St., Boston, Mass. Bids Sept. 5. CD 8/13.

J. L. Marshall & Sons, Inc., 560 York Ave., Pawtucket, R. I., CA **$825,588**, JUNIOR HIGH SCHOOL, BARRINGTON, R. I. Town, Frederick Thomas School Admin. Bldg., Barrington, R. I. Bids Aug. 26. CD 9/3, under LB.

A. F. Peaslee, Inc., 37 Lewis St., Hartford, Conn., CA **$916,000**, Mayberry Village SCHOOL, and May Road SCHOOL, EAST HARTFORD, CONN. Town of East Hartford School Bldg. Comn., 740 Main St., East Hartford, Conn. Bids Aug. 26. Awarded Sept. 5. CD 9/3, under LB.

▲ **Giordano Constr. Co.**, 287 Main St., Branford, Conn., LB **$1,921,000** (14 bidders) Proj. MR-65, 154 units 24 bldgs., moderate rental HOUSING, Eastern St., NEW HAVEN, CONN. New Haven Housing Auth., 195 Church St., New Haven, Conn. Bids Sept. 5. CD 8/13.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

September 23 Maryland September 25, 26 Pennsylvania

October 9 New York

STREETS AND ROADS

September 23 Maryland September 25, 26 Pennsylvania

September 30 New Jersey October 9 New York

NEW JERSEY—BA 9/25—New Jersey Turnpike Auth., Admin. Bldg., New Brunswick,

Burlington Co.—Improvs. at Cedar Lane Rd. and Burr's Rd. at Jacksonville Rd. along the Turnpike, Springfield Twp., Contr. No. R-18.

Camden Co.—furnishing, erecting approx. 450 ft. aluminum chain link protective fencing and other incidental work along parapets of Clements Bridge Rd. bridge which overpasses the Turnpike in Barrington, Contr. No. R-30.

N. Y., **Brooklyn**—MUSEUM BLDG. IMPRVS.—BA 10/1—Comr. Parks, Arsenal Bldg., Central Park, 64th St. and 5th Ave., New York, Zone 21, No. 1 to 5 inclusive, Stage 2, reconstr. and modernization, electrical work, plumbing, heating and ventilating and elevator work in connection reconstr. and modernization of Brooklyn Institute of Arts and Sciences, Central Museum Bldg., Eastern Parkway, Contr. No. B-48-357, Brooklyn Boro. Plans deposit $10 each. CD 6/6.

▲† **Delaware and Maryland**—BA 10/8—Dpt. Army, 2635 Abbottsford Rd., Phila., Pa., dredging, incl. removal approx. 594,000 cu. yd. material, Delaware and Chesapeake Canal, Reedy Point, New Castle Co., Del., and Chesapeake City, Cecil Co., Md., ENG-36-109-59-18. $1,500,000. CD 9/6/57.

BUILDINGS—BA

▲ **N. Y., New York**—SCHOOL—BA 9/25—Bureau Constr., 42-15 Crescent St., Long Island City, general constr. plumbing and drainage, heating and ventilating and electrical work and lighting fixtures for modernization and conversion of Junior High School 99, 1st Ave. and E. 100th St., Manhattan Boro. Plans deposit $25 for general, $10 each for trades. Extended date. CD 9/3.

▲ **Pa., Ebensburg**—STATE SCHOOL—BA 10/1—General State Auth., 18 & Herr Sts., Harrisburg, state school for retarded children. $4,000,000. Plans deposit $50. C. J. Lappley, Riverview Manor, Harrisburg, archt. A. F. Jones, c/o owner, ch. engr. CD 9/2, under LB.

N. J., **Pennsauken**—GYMNASIUM—BA 10/3—Bishop Eustace High School, Pennsauken, gymnasium, $344,000. Bernard Schwartz, engr. and Milton Schwartz, archts., both 10 S. 18 St., Phila., Pa.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany,

N. Y.—**Johnson, Drake & Piper, Inc.**, 86 Trinity Pl., New York, N. Y., CA **$9,330,415**, est. $11,788,000, six-lane divided concrete section Cross Bronx Expressway 0.6 mi. between Walton and Clay Aves., Bronx Co.

N. Y.—**Merritt Chapman & Scott Corp.**, 260 Madison Ave., New York 16, N. Y., CA **$7,256,400**, est. $9,910,000, constr. 8.05 mi. section four-lane divided Rte. 17 Expressway, starting about 3,000 ft. northwest Rte. 17B intersection north of Monticello and extending northward on new location to point about 1,000 ft. north of present intersection Rte. 17 and County Rd. 71 near Ferndale, incl. 0.06 mi. access roads, six highway grade separation structures and 3 bridges, addnl. truck climbing-lane along portions route and 8.97 mi. shoulder work on Liberty By-pass constr. job under constr. to north, Sullivan Co. Bids Aug. 7. CD 8/13, under LB.

▲ **Arundel Corp.**, 501 St. Paul Pl., Baltimore, Md., **L. E. Dixon Co.**, 409 S. California St., San Gabriel, Calif. and **Hunkin-Conkey Constr. Co.**, 1740 E. 12, Cleveland, O., LB **$39,834,292**, Tuscarora Power Plant, involving 2,715,000 cu. yd. excav. unclassified, 28,500 lin. ft. drill holes for exploration and grouting, 583,800 cu. yd. concrete, 35,000,000 lb. reinforcing steel, 1,283,000 misc. metal work, 1,049,000 lb. erection structural steel, 6,880,000 lb. erection gates, gate and stop log guides, Lewiston, Niagara Co., Spec. No. PA-N- 23007, Niagara Contr. No. N 10, NEW YORK. Power Authority of State of New York, The Coliseum Tower, 10 Columbus Circle, New York 19, N. Y. Bids Sept. 9. CD 6/27.

▲ **George W. Walker & Sons, Inc.**, 770 Elmwood Ave., Buffalo, N. Y., CA **$2,121,799**, general constr., heating, ventilating and air-conditioning, plumbing, electric, sewage treatment, site development, pedestrian overpass and pedestrian walkway for erection of restaurant and two gas stations, State Thruway, Erie Section, NEW YORK. State Dpt. P. Wks., State Office Bldg., Albany, N. Y. Bids Aug. 7. CD 8/13, under LB.

▲ **T & T Contg. Corp.**, 4814 Glenwood Rd., Brooklyn 3, N. Y., LB **$1,203,349** (7 bidders) combined sewers and grading, Flatlands Ave. from Autumn Ave. to Eldert Lane; Eldert Lane from Flatlands to Wortman Ave., Wortman Ave. from Eldert Lane to Drew St. and in Drew St. from Wortman to Sutter Aves., BROOKLYN, N. Y. President Brooklyn Boro, Rm. 21, Boro Hall, Brooklyn 1, N. Y. Bids Sept. 9. CD 9/3.

C. **W. Lauman & Co., Inc.**, Rte. 107, Bethpage, N. Y., CA **$666,289**, Contr. 902, conversion of North Yonkers Screening Plant, YONKERS, N. Y. Dpt. P. Wks., Westchester Co., County Office Bldg., White Plains, N. Y. Bids Aug. 20. CD 8/25, under LB.

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore 2. Bids opened 9/4,

E. **D. Plummer & Sons**, Chambersburg, Pa., LB **$742,933** (4 bidders) grading, drainage, surf. 3.479 mi. Rte. 64 near Ringgold and Rte. 77 at Smithsburg, W-488-9-620, Washington Co. CD 8/20.

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore 2. Bids opened 9/4,

Md.—**W. E. Dunn Constr. Co.**, Denton, Md., LB **$157,093** (7 bidders) 3 span, 40 ft., 60 ft., 40 ft., prestressed concrete box girder bridge on Md. No. 229 over Big Elk Creek, Elkton, CD 400-2-220, Cecil Co.;

Md.—**Gale Constr. Co.**, Galesville, Md., LB **$124,122** (5 bidders) single span rein.-con. rigid frame bridge on relocated Md. 31 over W. M. Railroad near Westminster, CL 342-6-720, Carroll Co. CD 8/20.

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2. Bids opened 8/5,

John D. Sheetz Constr. Co., 1334 Sulphur Spring Rd., Baltimore 27, Md., LB **$101,972** (5 bidders) 3 span steel WF beam bridge on northbound lane US 301 over Western Branch, P-713-5-320, Prince George Co. (**Correction**—low bidder). CD 8/12, under LB.

J. J. **Cunningham & Sons**, 370 Newkirk Ave., Trenton, N. J., LB **$145,575**, storm drains, curbing and paving Arena Dr. from South Broad to Gropp Ave., Hamilton Twp., TRENTON, N. J. Twp. of Hamilton, Municipal Bldg., Greenwood Ave., Trenton, N. J. CD 7/10.

▲ **John Monte Co.**, 2144 Greenfieldirct, Oak Park, Mich., LB **$936,358** sewerage system, Contr. No. 1, BOOTHWYN, PA. Upper Chichester Municipal Auth., Boothwyn, Pa. Bids Sept. 2. CD 7/30;

Globe Constg. Co., Victory Ave. and Cobbs Creek, Upper Darby, Pa., LB **$523,643** sewers and force mains, Contr. 2 (Boothwyn, Pa.).

▲† **Norair Eng. Corp.**, 188 22 St. N.W., Wash., D. C. LB **$1,169,500**. Bid No. 1; LB **$1,164,800**. Bid No. 2, LB **$1,159,800**. Bid No. 3 (4 bidders) air conditioning. Phase No. 3, Part No. 1, Dpt. Agriculture, South Bldg., WASH., D. C. General Services Admin., Region No. 3, 7th and D Sts. N.W., Wash., D. C. Bids Sept. 10.

BUILDINGS—LB & CA

▲ **Vicbar Constr. Corp.**, 17 Neptune Ave., Brooklyn 29, N. Y. Owner Builds, **$1,054,000**, 56 HOUSES, 1423-45 E. 100 St., 1426-72 E. 100 St. and 10-516-10 583 Flatlands, 9th St., BROOKLYN, N. Y. Morris J. Rothstein, 186 Joralemon St., Brooklyn 2, N. Y., archt.

▲ **Metzger Constr. Co.**, 429 Carlton St., Buffalo, N. Y. CA **$1,500,000**, 3 story HOSPITAL, CHEEKTOWAGA, N. Y. St. Joseph's Community Hospital, Inc., 3580 Harlem Rd., Buffalo, N. Y. Bids June 27. CD 7/22, under LB.

▲ **Cauldwell-Wingate Co.**, 101 Park Ave., New York 17, N. Y., LB **$7,192,000** (6 bidders) general contract Benjamin Franklin Houses (Proj. NYC-27) Section I, incl. 5 buildings, Nos. 1, 2A, 2B, 3, 4 and 5 in area bounded generally by 2 Ave., E. 106 St., 3 Ave. and P.S. 117, Manhattan Boro, NEW YORK, N. Y. New York City Housing Auth., 299 Broadway, New York, Zone 7, N. Y. Bids Sept. 9. CD 8/14;

H. Sand & Co., 11 Park Pl., New York 7, N. Y., LB $741,500 (5 bidders) heating (New York, N. Y.);

Teman Bros., 2 Chester St., Brooklyn 12, N. Y., LB $423,300 (10 bidders) electrical work (New York, N. Y.);

C. K. Rehner, Inc., 49-20 Skillman Ave., Woodside, N. Y., LB **$686,433** (9 bidders) plumbing (New York, N. Y.);

Watson Elev. Co., Inc., 342 W. 40, New York 36, N. Y., LB **$405,975** (4 bidders) elevators (New York, N. Y.).

▲ **Caristo Constr. Corp.**, 26 Court St., Brooklyn 2, N. Y., CA **$1,530,000**, general constr. PUBLIC SCHOOL 134, Scammel and Henry Sts., Manhattan Boro, NEW YORK, N. Y. Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, N. Y. Bids Aug. 26. CD 8/29, under LB.

▲ **Wilaka Constr. Co., Inc.**, 11 E. 44th St., New York 17, N. Y., CA **$1,834,000**, general constr., PUBLIC SCHOOL 28, St. Nicholas and Amsterdam Aves. W. 155 and W. 156 Sts., NEW YORK, N. Y. Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City 1, N. Y. Bids Aug. 13. CD 8/20, under LB.

Siegfried Constr. Co., 6 N. Pearl St., Buffalo, N. Y., CA **$807,700**, general contract Alexander Hamilton ELEMENTARY SCHOOL, TONOWANDA, N. Y. Town of Tonowanda Central School Dist., 1500 Colvin Ave., Kenmore, N. Y. CD 6/23, under LB.

Meranian Bldg. Co., Moorestown, N. J., Separate Contracts, **$620,000**, 38 unit RESIDENTIAL DEVELOPMENT, Willow Dr., MOORESTOWN (BURLINGTON, P.O.) N. J., Zel Bender, 225 S. 6 St., Camden, N. J., archt.

▲ **Andri Bldg. Co.**, Hy. 46, Clifton, N. J. Own Forces, **$3,000,000**, 95 HOUSES, Huber Lane, SECAUCUS, N. J. Roche & Roche, Rte. 46, Clifton, N. J., archts.

Purcell Brothers, 171 Preston St., Ridgefield Park, N. J., CA **$604,267**, 24,000 sq. ft. red brick, steel, glass STUDENT COMMONS BLDG., on Davenport West property, TEANECK, N. J. Fairleigh Dickinson University, East Rutherford, N. J. Fellheimer & Wagner, 115 E. 42 St., New York, N. Y., archts. CD 10/16.

Herman Glazer, 206 S. 42 St., Phila., Pa., Separate Contracts, **$600,000**, RESIDENTIAL DEVELOPMENT, Redwood Rd., etc., KING OF PRUSSIA, PA.

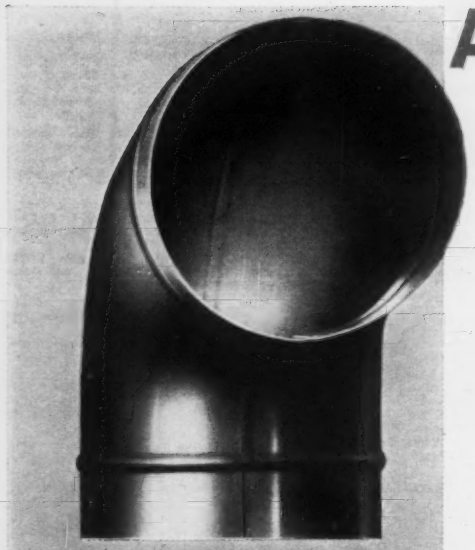
Edward Kelly, 660 Lindley Ave., Glenside, Pa., Separate Contracts, **$750,000**, 48-unit RESIDENTIAL DEVELOPMENT, Newtown Rd., etc., WARMINSTER, PA.

▲ **Sordoni Constr. Co.**, 45 Owen St., Forty Fort, Pa., CA **$2,055,500**, HOME FOR INFIRM, WILKES-BARRE, PA. Luzerne County Institution Dist., Court House, Wilkes-Barre, Pa. CD 6/13.

▲ **Gallagher Constr. Co.**, Flourtown, Pa., CA **$1,000,000**, Oyontz SHOPPING CENTER, Oyontz Ave. and Limekiln Pike, Cheltenham Twp., WYNCOTE, PA. Albert Toll, 7744 Washington Lane, Elkins Park, Pa. Aaron Colish, 117 S. 17 St., Phila., Pa., archt.

The San-Joe Constr. Co., 1836 Harford Ave., Baltimore 13, Md., LB **$362,600** (8 bidders), imprvs. to mixing basins Plants 1 and 2, Montebello Water Filtration Plant, BALTIMORE, MD. City, Bureau Water Supply, 505 Municipal Bldg., Baltimore 2, Md. Bids Sept. 3. CD 8/28.

(Continued on page 169)



ANNOUNCING

A New, Smoother Path For Hot or Cold Air

IDEAL FOR HIGH VELOCITY SYSTEMS

"Laminair-Flo"

TWO-PIECE 90° ELBOWS

DIE-STAMPED MACHINE MADE

Precision engineered, die-formed, two-piece elbows reduce friction loss considerably . . . systems are far more efficient. Production line manufacturing reduces costs . . . elbows can be specified with guaranteed uniform size and performance.

Complete Range Of Uniform Size, Die-Stamped Elbows In 3", 4", 5", 6", 7", 8" Diameters 20 Ga. Galvanized Steel — Continuous Everdur Weld

LESS FRICTION LOSS

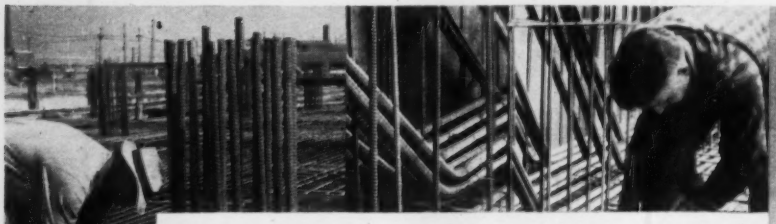
- Reduced Static Head Loss
- Cold Forged in Precision Dies
- True Radii
- No Variations in Workmanship
- Uniform Consistent Data

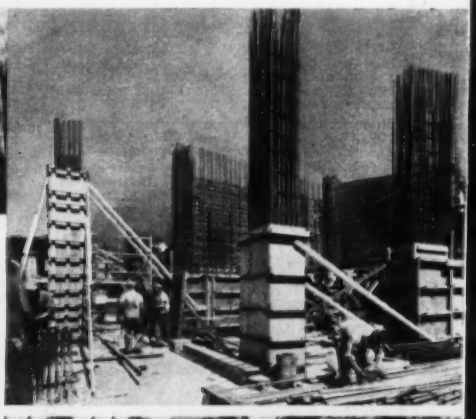
Write Division 95 For Price Information And New Engineering Test Data

UNITED SHEET METAL CO., INC.

Representatives In Principal Cities In United States And Canada

540 SOUTH DREXEL AVENUE, COLUMBUS 9, OHIO





Meet Your

BUILDING PARTNERS

For 34 years, members of the Concrete Reinforcing Steel Institute have been your "building partners" . . . working together with you, the architect, structural engineer, and contractor, to promote the use of reinforced concrete as an economical and flexible building medium. Through all these years, the Institute has carried on research to determine the proper and safe use of reinforced concrete, and the collection and dissemination of this technical data. Your increasing acceptance of this construction medium has made this an advantageous partnership—one that we hope will continue to grow to an even greater degree through all the years to come.

CONCRETE REINFORCING STEEL INSTITUTE C.R.S.I.

Concrete Reinforcing Steel Institute
38 S. Dearborn St., Chicago 3, Ill.

(Continued from page 167)

Ligon & Ligon, Inc., 3310 Ridgewood Ave., Baltimore 15, Md. LB **$244,390** (6 bidders), Contr. 630-W, water mains, Stemmers Run Rd., Essex, TOWSON, MD. Baltimore County Executive, County Office Bldg., Towson 4, Md. Bids Sept. 4. CD 8/26.

Ligon & Ligon, Inc., 3310 Ridgewood Ave., Baltimore 15, Md., LB **$294,837** (8 bidders), Contr. 619-W, water main extension Pikesville Area, Pikesville, TOWSON, MD. Baltimore County Executive, County Office Bldg., Towson 4, Md. Bids Sept. 4. CD 8/25.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

September 23 West Virginia September 24 Louisiana
September 24 Virginia

STREETS AND ROADS

September 23 West Virginia September 24 Louisiana
September 24 Virginia

HEAVY CONSTRUCTION—LB & CA

▲ **Ray D. Lowder, Inc.**, P. O. Box 1101, Albemarle, N. C., CA **$1,046,558** Div. 1 and 2, water supply and distr. lines, WOODRUFF, S. C. Woodruff-Roebuck Water Dist., Woodruff, S. C. Bids Aug. 26. CD 9/8, under LB.

▲ **GEORGIA**—State Hy. Dpt., Roy F. Chalker, chn. General Office, 2 Capitol Square, Atlanta, Bids opened 9/5,

Ga.—**Ledbetter Johnson Co.**, Box 1067, Rome, Ga., LB **$513,307**, wid'n., resurf. 12.393 mi. Rome-Calhoun Rd., State Rte. 53, Fed. Aid Proj. DF-065-1 (4) Floyd and Gordon Counties; LB **$870,900**, wid'n., resurf. 22.267 mi. Buchanan-Dallas Rd., State Rte. 120, Fed. Aid Sec. Proj. DS 0836 (4), Haralson and Paulding Counties; LB **$1,065,975**, grading, paving, wid'n. 2 existing bridges 9.255 mi. Rome-Summerville Rd., State Rte. 1, Fed. Aid Proj. F 017-3-(13) and F 019-1(2), Chattooga Co.;

Ga.—**W. L. Cobb Constr. Co.**, Box 410, Decatur, Ga., LB **$719,452**, wid'n., resurf. 17.716 mi. Valdosta-Homerville Rd., State Rte. 38, Fed. Aid Proj. DF 007-3 (5) Lanier and Clinch Counties; LB **$686,585**, wid'n., resurf. 17.502 mi. Valdosta Adel Road, State Rte. 7, U. S. Rte. 41, Fed. Aid Proj. DF-001-1 (12) Lowndes and Cook Counties; LB **$641,311**, wid'n., resurf. 15.772 mi. Newton-Albany Rd., State Rte. 91, Fed. Aid Sec. Proj. DS 1184 (1) Maker and Dougherty Counties;

Ga.—**Knox Bros., Inc.**, Box 311, Thomson, Ga., LB **$1,395,712**, wid'n., reconstr. and divided land paving and 2 bridges 4.778 mi. Augusta-Waynesboro Rd., State Rte. 21, Fed. Aid Proj. F-015-1(16) Richmond Co.; LB **$668,834**, grading, paving and 2 bridges 12.69 mi. Warrenton-Washington Rd., State Rte. 80, Fed. Aid Sec. Proj. S-1096 (4) Warren, McDuffie and Wilkes Counties;

Ga.—**Hugh Steele, Inc.**, Box 398, Centre, Ala., LB **$116,082**, grading, paving 1.172 mi. College Park-Riverdale Rd., State Rte. 139, Fed. Aid Proj. DUS-85-(2), Clayton Co.;

Ga.—**Lothridge Bros.**, Box 81, Gainesville, Ga., LB **$414,549**, grading, paving 4.814 mi. Lockheed Plant-Gainesville Rd., FAS Rte. 1781, Fed. Aid Sec. Proj. S-1781 (1) Dawson Co.;

Ga.—**Sowega Farm Machinery Co.**, Edison, Ga., LB **$338,359**, grading, paving 20.047 mi. Jim Woodruff Reservoir-Boykin Rd., FAS Rte. 1783, Fed. Aid Sec. Proj. S-1784 (1) Decatur Co.; LB **$100,597**, grading, paving 6.37 mi. Bainbridge-Boykin Rd., FAS Rte. 1784, Fed. Aid Sec. Proj. S-1784 (1) Decatur Co.;

Ga.—**G. B. Henderson, Jr., Contr.**, Ocilla, Ga., LB **$125,685**, grading, paving 4.618 mi. Ocilla-Fitzgerald Rd., FAS Rte. 1638, Fed. Aid Sec. Proj. S-1638 (1) Irwin Co.;

Ga.—**R. G. Foster & Co.**, Drawer 8, Wadley, Ga., LB **$332,528**, wid'n., resurf. 7.418 mi. Waynesboro-Louisville Rd., State Rte. 24, Fed. Aid Sec. Proj. SD 0937 (1) Jefferson Co.;

Ga.—**Acme Constr. Co.**, Cochran, Ga., LB **$390,395**, wid'n., resurf. 10.011 mi. Washington-Thompson Rd., State Rtes. 10 and 17, U. S. Rte. 78 Fed. Aid Proj. DF-014-1 (2) Wilkes Co.;

Ga.—**Claussen-Lawrence Constr. Co.**, Box 840, Augusta, Ga., LB **$244,248**, wid'n., reconstr., resurf. 3.214 mi. Midway-Savannah Rd., State Rte. 25, Rte. 17, Fed. Aid Proj. DF 009-2 (16) Bryan Co.;

Ga.—**S. J. Alexander, Inc.**, 3158 Maple Dr. N. W., Atlanta, Ga., LB **$636,625**, wid'n., resurf. 16.182 mi. Americus-Montezuma Rd., State Rte. 49, Fed. Aid Proj. DF-029-1, (1) Sumter and Macon Counties;

Ga.—**Wright Contg. Co.**, Box 1580, Columbus, Ga., LB **$705,580**, resurf. 18.76 mi. Talbotton to State Rte. 3 Road, State Rte. 22, U. S. Rte. 80, Fed. Air Proj. DF-002-1(8) Talbot and Taylor Counties;

Ga.—**Reeves Constr. Co.**, Americus, Ga., LB **$166,842**, grading, paving and 1 bridge on 6.028 mi. Vienna-Pineview Rd., FAS Rte. Fed. Aid Sec. Proj. DS-9672 (3) Dooly and Wilcox Counties.

▲ **GEORGIA**—State Hy. Dpt., 2 Capitol Sq. S. W., Atlanta,

Ga.—**Ledbetter-Johnson Co.**, Box 1067, Rome, Ga., CA **$5,900,911** imprv. 10.446 mi. Atlanta-Augusta Rd. FAP 1-402-2(5). DeKalb Co.;

Ga.—**Hewitt Contg. Co.**, Box 1372, Columbus, Ga., CA **$3,169,469**, 2.473 mi. Atlanta Circumferential Rt., FAP 1-407-1(5) ct. 1, DeKalb Co. Bids June 27. CD 7/7, under LB.

▲ **GEORGIA**—State Hy. Dpt., 2 Capitol Sq. S. W., Atlanta,

Henry Newton Co., Box 428, Decatur, Ga., CA **$1,149,571**, constr. underpass at Georgia Railroad and Seaboard Air Line Railroad at Moreland and DeKalb Aves., 0.559 mi. paved approaches, an interchange, and connections, beginning at point near intersection of Moreland Ave. and Brantley St. and extending north along Moreland to Euclid Aves., otherwise known Fed. Aid Proj. UG-037-2(4) and U-037-2(5). Fulton and DeKalb Counties. Bids June 27. CD 7/8, under LB.

▲ **FLORIDA**—State Road Dpt., Tallahassee,

Cone Bros. Constr. Co., Box 1259 Tampa, Fla., CA **$1,362,154**, limerock base with b. conc. surf. course and binder, 4 concrete grade separation bridges 863.37 ft. in length, with prestressed beams on prestressed concrete piling; aluminum handrail; small drainage structures, fencing, etc. 5.085 mi. FAI Proj. No. I-4-2 (10) 128 Job No. 79110 3403 SR 400, Volusia Co. Bids Aug. 26, awarded Sept. 9. CD 8/29, under LB.

FLORIDA—State Rd. Dpt., Tallahassee,

Cone Bros. Constr. Co., Box 1259, Tampa 1, Fla., CA **$992,591**, 4 lane divided roadway facility, heavy grading, limerock base; b. conc. surf. course and binder course twin concrete bridges, each 486x40 ft. treated timber fenders, etc., 0.42 mi. State Proj. Job No. 87260-3501, SR 826, Dade Co. Bids Aug. 26, awarded Sept. 8. (**Correction**—LB $99,635). CD 8/29, under LB.

City, City Hall, Miami, Fla., cancelled bids to have been opened Sept. 3, North Belle Meade sanitary sewer imprvs., MIAMI, FLA. **$415,000.** CD 7/29.

▲ **ALABAMA**—State Hy. Dpt., Montgomery,

Ala.—**Ashburn & Gray**, Huntsville, Ala., CA **$623,083**, bit. treatment 12.167 mi. Huntsville Parkway, U.S. 231 (2nd stage), Madison Co. Bids June 27;

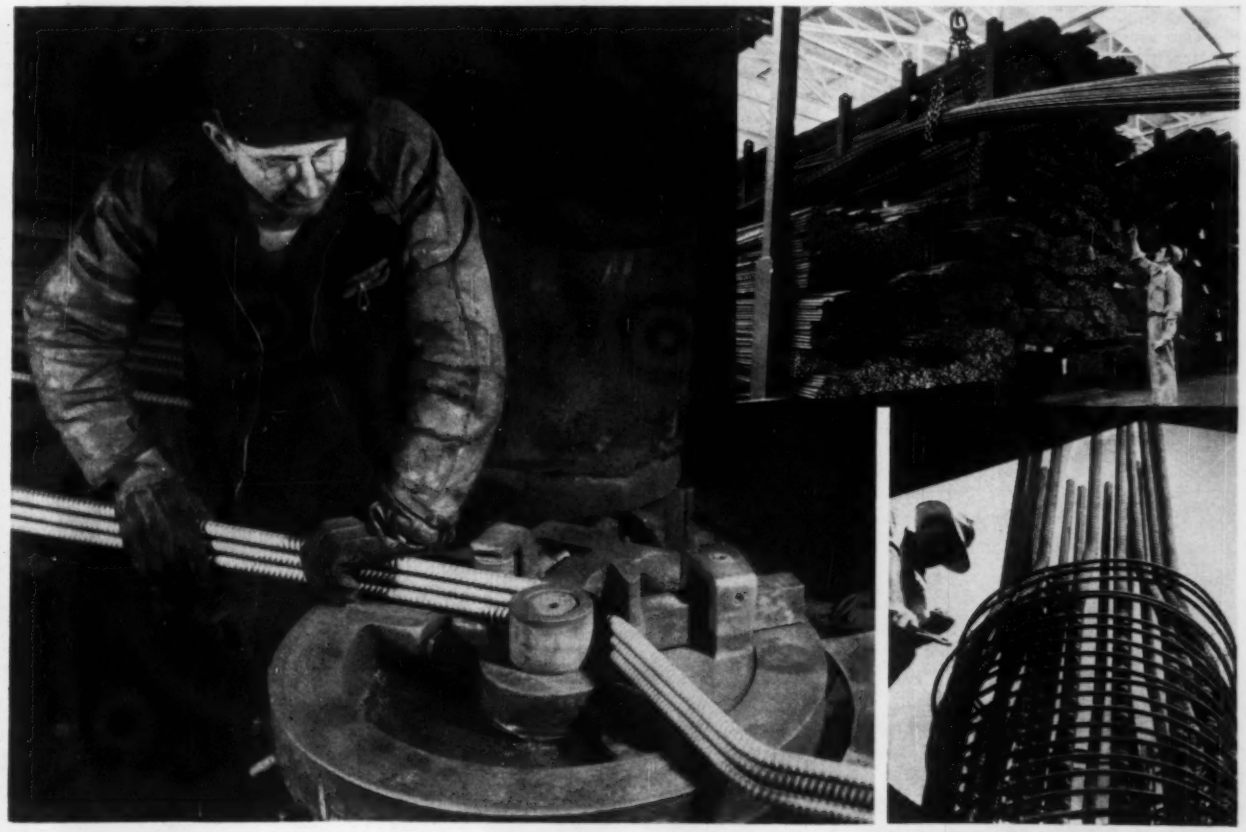
Ala.—**Perry Brown Constr. Co.**, Albertville, Ala., CA **$658,192**, base and bit. paving 14.747 mi. Double Springs Natural Bridge Rd., Winston Co. CD 7/9, under LB.

ALABAMA—State Hy. Dpt., Montgomery,

Scott Co., Opelika, Ala., CA **$698,067**, substructure, approaches, bridge over Black Warrior River and approaches over L.&N. R.R., Tuscaloosa Co. Bids June 27. CD 7/9, under LB.

▲ **KENTUCKY**—Commonwealth of Ky., Dpt. Hys., Frankfort, Bids opened 9/5,

Ky.—**W. M. Hooper**, P.O. Box 288, Caneyville, Ky., LB **$654,829** (3 bidders), c. conc. 1.853 mi. Hardinsburg-Leitchfield Rd., S. 68 (1), Breckinridge Co.; LB **$424,621** (2 bidders) b. conc. surf. Class I, 0.729 mi. Hardinsburg-Leitchfield Rd., bridge and approaches at Rough River approx. 1.5 mi. south of Madrid S. 68 (2) SP 43-15 & SP 14-93, Grayson and Breckinridge Counties;



Ky.—**T. C. Young Constr. Co.**, Williamsburg, Ky., LB **$220,475** (6 bidders), traffic bound surf. 5.09 mi. Little Mount-Mt. Eden Rd. from Ky. 44 at Little Mount, extending easterly to point approx. 1 mi. west of Ky. 636 in Mt. Eden, DS 609(3) RS 108 467; 0.896 mi. Hickory Ridge Mt. Eden Rd. from Ky. 636 in Mt. Eden to county road approx. 0.9 mi. west DS 609 (4) RS 108-327, Spencer Co.; LB **$180,365** (5 bidders), traffic bound surf. 4.828 mi. Owenton-Cull-US 227 Rd. from Ky. 22 near WCL of Owenton extending northwesterly to Cull RS 94-633 Owen Co.; culvert and approaches at Dry Branch on Taylor Ave. in Monterey, 0.095 mi. RS 94-913 Owen Co.; CD 8/20, under Bridges;

Ky.—**Roy Ryan Sons Co.**, 5416 Booneville Hy., Evansville, Ind., LB **$620,427** (3 bidders), b. conc. 1.062 mi. Glen-Dean-McDaniels Rd. bridge and approaches at North Fork of Rough River approx. 1.5 mi. southeast of Axtel S 712 (1) SP 14-133 Breckinridge Co.; LB **$369,388** (3 bidders), b. conc. 1.259 mi. Sebree-Onton-Ashbyburg Rd. bridge and approaches at Deer Creek approx. 4 mi. southeast of Sebree DS 656 (3) SP 117-109, Webster Co.;

Ky.—**John Treitz & Son**, 741 Franklin St., Louisville, Ky., LB **$204,481** (4 bidders), b. conc. Class I surf. 0.661 mi. Glen Dean-McDaniels Rd., bridge and approaches at Long Lick Creek near Axtel S 712 (2) SP 14-133, Breckinridge Co.;

Ky.—**R. E. Gaddie, Inc.**, P. O. Box 343, Bowling Green, Ky. LB **$129,520** (4 bidders), bit. surf. 9.965 mi. Tompkinsville-Emberton Rd., RS-86-454, Monroe Co.;

Ky.—**Greer Bros. & Young and Greer Bros. & Woodson**, P. O. Box 346, London, Ky. LB **$3,262,948** (7 bidders), grade, drain, surf. intersecting and frontage roads Winchester-Mt. Sterling Rd. from 0.303 mi. west of Clark-Montgomery County line extending northeasterly from point approx. 2.75 mi. northeast of northeast corporate limit of Mt. Sterling, 8.842 mi. I 64-5 (6), Clark and Montgomery Counties;

Ky.—**Wright Constr. Co.**, Box 459, Rt. 1, Covington, Ky. LB **$123,885** (5 bidders), trafficbound surf. 1.641 mi. Rough River Dam-Ky. 108 Rd. S 695 (2), Breckinridge Co.;

Ky.—**McLellan Stone Co.**, P. O. Box 651, Bowling Green, Ky. LB **$79,913** (2 bidders), b. conc. surf. 11.564 mi. Franklin-South Union Rd. SP GP 62 (1958), Simpson Co.;

Ky.—**Cumberland Constr. Co.**, Burkesville, Ky. LB **$110,922** (1 bidder) trafficbound surf. 2.781 mi. Douglas-Claudus-Harris Rd. RS 2-655, Allen Co.;

Ky.—**Cantrill Constr. Co.**, 700 N. Broadway, Lexington, Ky. LB **$87,274** (1 bidder), b. conc. or bit. road mix 3.5 mi. Ida Mac-Heidelberg-Ky. 52 Rd. RS 65-289, Lee Co.;

Ky.—**Robt. M. Robinson**, 3700 E. 4th St., Owensboro, Ky. LB **$187,651** (2 bidders), bit. road mix surf. various roads 27.55 mi. RS GP 65 (1958) Edmonson and Warren Counties. CD 8/20;

Ky.—**Ruby Constr. Co. & Ruby Mining Co.**, 101 Sugg St., Madisonville, Ky. LB **$1,939,557** (5 bidders), c. conc. with b. conc. on shoulders and incid. streets 0.57 mi. North South Expressway in Louisville from Woodbine St. extending northerly to St. Catherine St. I 65-6 (7), Jefferson Co. CD 8/13.

BUILDINGS—LB & CA

▲† **Roscoe-Ajax Constr. Co.**, 1107 19th St. N. W., Wash., D. C. LB **$2,289,000** (8 bidders) excavation and foundation work, Central Intelligence Agency HEADQUARTERS BLDG., LANGLEY, VA. General Services Admin., 19th and F Sts. N. W., Wash., D. C. Bids Sept. 9. CD 8/14.

▲† **Babcock & Wilcox**, 161 E. 42 St., New York, N. Y., CA design and construct low per REACTOR to provide information for liquid metal fuel reactor experiment, LYNCHBURG, VA. Atomic Energy Comm., 1901 Constitution Ave. N.W., Wash. 25, D. C.

L. P. Cox Co., Box 188, Sanford, N. C. CA **$704,268** PHILLIPS HALL addn., CHAPEL HILL, N. C. University of North Carolina, Chapel Hill, N. C. Bids July 29. CD 8/25, under LB.

L. S. Bradshaw & Sons, Salisbury, N. C. CA **$664,300** 75,000 sq. ft. JUNIOR HIGH SCHOOL, SALISBURY, N. C. City of Salisbury, Bd. Educ., Salisbury, N. C. Bids Aug. 5. CD 8/20, under LB.

▲ **Thompson-Street**, 2622 Piedmont Rd. N. W., Atlanta, Ga. CA **$1,131,000** CHURCH, ATLANTA, GA., Peachtree Rd. Presbyterian Church, 3156 Peachtree Rd., Atlanta, Ga. Logan & Williams, 32 Palmer Bldg., Atlanta, Ga., archts. Bids Aug. 5.

▲ **Allen M. Campbell Co.**, Box 836, Tyler, Tex. CA **$4,741,900** Sunland TRAINING CENTER, Lee County, east of FORT MYERS, FLA. Bd. Comrs. State Institution, Tallahassee, Fla. Bids July 7. CD 7/28, under LB.

Thomas A. Hodges Constr. Co., 1040 Bayview Dr., Fort Lauderdale, Fla., CA **$950,000.** 93 APARTMENT UNITS, POMPANO BEACH, FLA. Wm. H. Lamb, Golden Falcon Hotel, 1900 S. Ocean Blvd., Pompano Beach, Fla.

A. B. Newton & Sons, Box 191, Vidalia, Ga., CA **$444,000**, HOUSING, Proj. Ala. 115-1A-1B, ENTERPRISE, ALA. Enterprise Housing Auth., Enterprise, Ala. Bids Aug. 21. CD 8/7.

▲ **George A. Fuller Co.**, Gibraltar Life Bldg., Dallas, Tex. CA Est. **$1,000,000**, 3 story, porcelain, aluminum, granite BANKING HOUSE, St. Joseph, St. Louis and Royal Sts., MOBILE, ALA. American National Bank & Trust Co., 8 St. Joseph St., Mobile, Ala. Bids Aug. 27, awarded Sept. 6. CD 8/29, under LB.

Tom Ollinger, 314 Dalewood Dr., Spring Hill, Mobile, Ala. CA **$500,000**, 4 story DEPARTMENT STORE remodel, enlarge facilities, MOBILE, ALA. L. Hammel Dry Goods Co., 7 S. Royal St., Mobile, Ala. Copeland, Novak & Israel, 744 Lexington Ave., New York, N. Y., and Ed. Baumhauer, 1157 Spring Hill Ave., Mobile, Ala., archts.

Long Beach Municipal Separate School Dist., Long Beach, Miss., rejected bids JUNIOR-SENIOR HIGH SCHOOL, LONG BEACH, MISS. LB **$424,276.** CD 9/5, under LB. New bids Sept. 10.

Abraham Constr. Co., Box 1731, Baton Rouge, La. LB **$374,000**, 2 story Istrouma HIGH SCHOOL addn., BATON ROUGE, LA. East Baton Rouge Parish School Bd., 805 St. Louis St., Baton Rouge, La. Bids Aug. 28.

▲ **L. W. Eaton Co. Inc.**, Box 767, Triad Bldg., Baton Rouge, La., CA **$2,088,000.** Capital Avenue HIGH SCHOOL, BATON ROUGE, LA. East Baton Rouge Parish School Bd., 805 St. Louis St., Baton Rouge, La. Bids Aug. 21. CD 9/2, under LB.

Gossen Constr. Co., P. O. Box 818, Lafayette, La. LB **$355,000** (6 bidders), POWER PLANT addns., cooling tower basin, boiler foundation and walkways and oil tank foundations at Steam Generating Station, LAFAYETTE, LA. City, City Hall, Lafayette, La. Bids Sept. 2. CD 8/7.

† **Pittman Constr. Co., Inc.**, 2925 Franklin Ave., New Orleans, La. CA **$977,000**, POST OFFICE, LAFAYETTE, LA. General Services Admin., Public Bldgs. Service, 19 and F Sts. N.W., Wash. 25, D. C. CD 5/15, under LB, Commercial Buildings.

▲ **Southeastern Constr. Co.**, P. O. Box 1197, 1st Natl. Bank Bldg., Jackson, Miss. CA **$1,141,784**, MUNICIPAL AUDITORIUM, LAFAYETTE, LA. City, City Hall, Lafayette, La. Bids Aug. 19. CD 9/3, under LB.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
October 2 Wisconsin
STREETS AND ROADS
October 2 Wisconsin

Ill., Chicago—BA 9/28—City, City Hall, concrete paving 25 alleys, concrete constr., sidewalks, bit. street paving, various locations. $333,000. CD 1/2/57.

O., Euclid—BA 9/29—City, City Hall, 585 E. 222 St., Cleveland, Zone 23, Babbitt Rd. Sanitary Sewer, Contr. 3, 6,314 ft. 30- to 48-in. sewers. Over $500,000. Plans deposit $60. Havens & Emerson, 640 Leader Bldg., Cleveland, Zone 14, engrs. CD 11/20.

BUILDINGS—BA

Wis., Random Lake—SCHOOL—BA 9/25—Bd. Educ., 579,000 cu. ft. high school, $400,000. Plans deposit $15. E. A. Stubenrauch & Assocs., 712 Erie Ave., Sheboygan, archts. CD 6/25.

Iowa, Thompson — SCHOOL — BA 9/30 — Bd. Educ., high and elementary school addns. $344,000. Haarstick-Lundgren & Assocs., N. 212 First National Bank Bldg., St. Paul, Minn., archts.

Minn., Prior Lake—SCHOOL—BA 11/10—Bd. Educ., Prior Lake, school addn. $345,000. Ames, Crommett & Assocs., 2412 Valentine Ave., St. Paul, archts.

BUILDINGS—SLC

▲ **Ill., Chicago**—HOME—Chicago Foundling Homes, 15 S. Wood St., soon lets contract 2 story, 30,000 sq. ft. foundling home, 1720 W. Polk St. $3,000,000. Naess & Murphy, 80 E. Jackson Blvd., archts. CD 2/15/56.

Ill., Chicago—HOSPITAL—Franklin Blvd. Community Hospital, 3240 W. Franklin Blvd., soon lets contract 2 story, brick, stone hospital addn., $350,000. Bids Mar. 19 rejected. L. F. Colman, 7917 S. Exchange Ave., archt. CD 3/17.

▲ **Ill., Granite City**—HOSPITAL—St. Elizabeth's Hospital, Sisters of Divine Providence, 2100 Madison Ave., soon lets contract 6 story, brick, steel, concrete hospital wing addn. **$1,500,000.** Gabriel & Dulgeroff, 1839A Delmar Ave., archt. CD 4/22.

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—Dpt. Hys., Columbus, Zone 15,

O.—**W. E. Ringwald & Sons**, 42 E. 2 St., Chillicothe, O. CA **$1,053,551**, est. $1,035,600, widen, resurf. 5.1 mi. U.S. Rte. 250 2 bridges over Owl Creek and Cat Trail Run, Proj. 333, Ross Co.;

O.—**Arthur S. Langenderfer Inc.**, 4690 W. Bancroft St., Toledo, O., CA **$1,168,925**, est. $1,259,900, widen 15.5 mi. U.S. Rte. 24, proj. 310, Defiance and Paulding Counties;

O.—**Claude A. Janes, Inc.**, Box 127, Chesterhill, O. CA **$2,510,990, est.** $3,048,800, widen, straightening 11.5 mi. State Rte. 78, 4 large cattle passes, proj. 328, Monroe Co.;

O.—**The W. L. Harper Co.**, 2910 E. Highland Ave., Cincinnati, O., CA **$3,605,665**, est. $3,883,000, fifth section of Cincinnati-Dayton Expressway and bridges over Clear Creek and State Rte. 73, Proj. 329, Montgomery and Warren Counties. Grand total $8,339,131. Bids Aug. 19. CD 8/27.

▲ **OHIO**—Dpt. Hys., Columbus, Zone 15, Bids opened Sept. 3,

O.—**National Eng. Co.**, 1010 Euclid St., Cleveland, O., LB **$1,947,268**, est. $2,635,800. twin bridges carrying Cincinnati-Conneaut Freeway over Grand River (State Rte. 1), Proj. 379 Lake Co.;

O.—**Blazer & Wright, Inc.**, Cheshire, O., LB **$168,848**, est. $186,500, replacing existing bridge carrying State Rte. 125 over Hills Fork Creek, Proj. 399, Adams Co. CD 7/25.

▲ **OHIO**—Dpt. Hys., Columbus, Zone 15, Bids opened Sept. 3.

O.—**Shelly & Sands**, Thornville, O., LB **$102,734** est. $123,000, resurf. 9.1 mi. 2 sections, U.S. Rte. 42, Proj. 370, Delaware Co.; LB **$271,890**, est. $296,300. widn. 5.6 mi. U.S. Rt. 62, Proj. 403, Licking Co.;

O.—**Fred Walls & Sons**, New Weston, O., LB **$108,308**, est. $110,590. resurf. 7 mi. Fort Recovery, State Rte. 119, resurf. 8.2 mi. in 2 section, State Rte. 49, Proj. 410 Mercer Co.; LB **$76,970**, est. $71,700. resurf. U.S. Rte. 127, resurf. 9.9 mi. U.S. Rt. 127, Proj. 368, Darke and Mercer Counties;

O.—**Bates & Rogers Constr. Co.**, 600 W. Jackson St. Chicago, Ill., LB **$5,307,249**, est. $6,136,800. 5.7 mi. section, Cincinnati-Conneaut Freeway (State Rte. 11), incl. 9 bridges, Proj. 378, Lake Co.;

O.—**Earl E. Sockman**, Fredericktown, O., LB **$118,694**, est. $151,600, removing hazardous curves on State Rte. 247, Lost Fork Creek area, Proj. 376, Highland Co.;

O.—**Schoen Asphalt Paving Co.**, 310 S. Westward St., Toledo, O., LB **$209,903**, est. $207,500. resurf. 10.6 mi. Corduroy Rd. Toledo, County Rd. 180, Proj. 381, Lucas Co.;

O.—**Thorpe Constr. Co.**, 109 N. Union St., Akron, O., LB **$154,494**, est. $166,600. reconstr. State Rt. 8 and U.S. Rtes. 36 and 250, Proj. 396, Tuscarawas Co.;

O.—**City Asphalt & Paving Co.**, 120 Pike St. Youngstown, O., LB **$118,047**, est. $102,100. resurf. 4.3 mi. U.S. Rt. 422, Proj. 406, Trumbull Co.;

O.—**Red Malcuit, Inc.**, Strasburg, O., LB **$489,843**, est. $511,300. 2.5 mi. section relocated State Rte. 36, Proj. 367, Coshocton Co.;

O.—**Dale Krout & Sons**, Lima Rd., Findlay, O., LB **$88,840**, est. $84,200. resurf. 2 mi. State Rte. 18 Poplar St., and Sandusky St., resurf. County Line St., Proj. 392, Seneca and Wood Counties;

O.—**Fenton Constr. Co.**, Masters Ave., Ashland, O., LB **$202,695**, est. $183,700. resurf. 6 mi. State Rte. 42; 0.4 mi. State Rte. 42; 4.9 mi. State Rte. 224, Proj. 362, Ashland, Medina and Wayne Counties;

O.—**Heil Contg. Co.**, 2601 Adgate Rd., Lima, O., LB **$89,860**, est. $91,600, resurf. 9.7 mi. U.S. Rte. 33, 3.8 mi. U.S. Rte. 33, Proj. 364, Auglaize and Mercer Counties;

O.—**Don S. Cisle**, Augspurger Ave. and B. & O. R.R., New Miami, O., LB **$95,429**, est. 696,300. resurf. 2 mi. State Rte. 4, Proj. 365, Butler Co.; CD 8/25.

ILLINOIS—Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldg., Springfield.

Rock Road Constr. Co., 5915 Rodgers Ave., Chicago, Ill. CA **$558,270**, widening, resurf. 11.15 mi. Ill. Rte. 80 between Hanover and Savanna, JoDaviess and Carroll Counties. CD 8/28.

▲ **Contracting & Material Co.**, 1235 Dodge St., Evanston, Ill., and **Kenny Constr. Co.**, 3220 Oakton St., Skokie, Ill. CA **$3,078,596**, runway and taxiway extens. O'Hare Field, CHICAGO, ILL., Dpt. Purchases, City of Chicago, City Hall, Chicago, Ill. CD 9/4, under LB.

John Doherty Co., 9824 South Genda Ave., Chicago 43, Ill., LB **$484,330**, (5 bidders) sewage treatment plant, Bloom Twp., CHICAGO, ILL. Metropolitan Sanitary Dist. of Chicago, 100 E. Erie St., Chicago 11, Ill. Horace Ramey, 100 E. Erie St., Chicago 11, Ill., engr. Bids Aug. 28. CD 8/15.

▲ **John Doherty Co.**, 9824 Genoa Ave., Chicago, Ill., CA **$1,057,460**, aux. outlet Beverly-Calumet sewerage sys., Morgan, May, 92nd, 94th, 100th and Winchester Sts., CHICAGO, ILL. City of Chicago Dpt. Purchases, Chicago, Ill. CD 8/12, under LB.

Lake States Engineering Corp., 53 W. Jackson Blvd., Chicago, Ill., LB **$740,000**, 1,1000 ft. steel bulkhead for exhibition hall, 23 St. and Lake Michigan, CHICAGO, ILL. Metropolitan Fair & Exposition Authority, 208 S. LaSalle St., Chicago, Ill. Bids Sept. 3. CD 8/28.

▲ **Superior Concrete Constr. Co.**, 5113 Woodlawn Ave., Chicago, Ill., CA **$1,149,610**, N.W. Expressway 8 span wide flange beam deck feeder bridge over Chicago River, E. approach, Proj. BUGI 265 (49), CHICAGO, ILL. Cook Co., Chicago, Ill. Bids Aug. 12. CD 9/2, under LB.

BUILDINGS—LB & CA

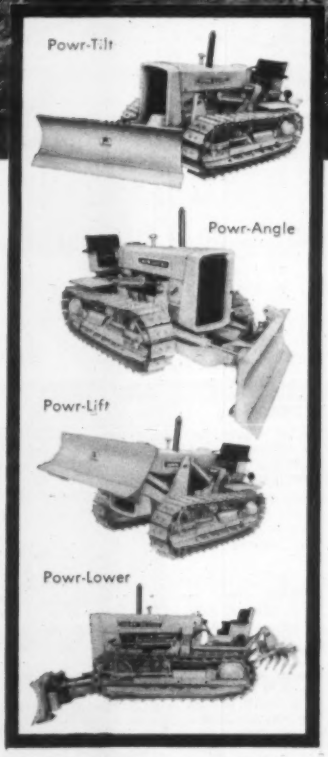
Wm. Leuvelink & Son, 2316 Duck Creek Rd., Cincinnati, O. CA **$811,461**, RECEIVING AND TRAINING UNIT, Rollamn State Hospital for Dpt. Mental Hygiene & Correction, CINCINNATI, O. Ohio Dpt. P. Wks., State Dpt. Bldg., Columbus, O. Bids July 29. CD 8/5, under LB.

▲ **Garwick & Ross, Inc.**, 990 W. 3 Ave., Columbus, O. CA Est. **$2,500,000**, 4 story, bsmnt., brick, concrete, steel OFFICE BLDG. with 135 ft. center tower, COLUMBUS, O. Buckeye Union Casualty Co., 515 E. Broad St., Columbus, O. Benham, Richards & Armstrong, 1124 Goodale Blvd., Columbus, O., archts. Byers, Urban, Klug & Pittenger, 1740 E. 12 St., Cleveland, O., engrs.

▲ **Geo. A. Fuller Co.**, 111 W. Washington St., Chicago, Zone 2, Ill., CA est. **$1,500,000** (9 bidders) 3 story, bsmnt., L shaped 55 x 115 ft. and 53 x 200 ft. rein.-con., concrete block interior finish, Ind. limestone curt. wall, etc. Robt. R. McCormick Law SCHOOL addn., 303 E. Chicago Ave., CHICAGO, ILL. Northwestern University, W. S. Kerr, bus. mgr., Evanston, Ill. Bids Aug. 14, awarded Sept. 5.

(Continued on page 172)

TILT, ANGLE, LIFT, and LOWER
with just a touch of the levers...



The NEW JOHN DEERE All-Hydraulic DOZER

THE first in its field—and the most versatile, easiest-to-operate dozer in industry—the new John Deere fully hydraulic 64 Dozer!

Just a touch of the proper control lever and the new 64 responds quickly and positively to your command. Tilting, angling, lifting, and lowering—even while you're on the go—each in a swift, sure motion that adds up to maximum operator control and convenience, lower earth-moving cost, and a better, faster job.

The 64 is built to "take it" on all types of industrial work. Heavy boom is of 1/2-inch material, box-welded and reinforced. The two hydraulic cylinders provide angling up to 25 degrees, right or left. Heavy 1-3/4-inch angling pivot pin is hardened for long life; angling frame attaches directly to blade. Heavy-duty 80-inch blade is box-welded and properly curved to produce maximum rolling action for best work. A single double-acting cylinder tilts the blade 7-3/4 inches to right or left. Two double-acting cylinders raise and lower the blade (37 inches above ground, 11 inches below.)

Combined with the outstanding economy and performance of the John Deere "440" Crawler, the 64 is a unit that will appeal to any earth-moving contractor, large or small. See your nearest John Deere industrial dealer.

JOHN DEERE
Industrial
Tractors and Equipment

SEND FOR FREE LITERATURE

JOHN DEERE—INDUSTRIAL DIVISION • MOLINE, ILL. • Dept. EN.1-Y

Please send me additional information on No. 64 Bulldozer and the John Deere Credit Plan.

*Name*_____

*Address*_____

*City*_____ *State*_____

(Continued from page 170)

J. L. Simmons Co., 506 S. Wabash Ave., Chicago, Ill., LB **$688,400**, two 4 story residence halls, 1 story part bsmnt., dining hall, lounge and kitchen on campus, CHICAGO, ILL. Illinois Institute of Technology, 3300 S. Federal St., Chicago, Ill. Bids Aug. 29. CD 8/18.

Keslin Constr. Co., 10619 S. Avenue E., Chicago, Ill., Own Forces **$380,000**, 20 HOMES, 114th and Avenue J., CHICAGO, ILL. J. L. Johnson, 11300 S. Halsted St., Chicago, Ill., archt.

Sumner Sollitt Co., 307 N. Michigan Ave., Chicago 1, Ill., CA **$927,000**, 45 x 187 ft. APARTMENT, 92 apartments, 2717 N. Leavitt St., CHICAGO, ILL. Chicago Housing Authority, 608 S. Dearborn St., Chicago, Ill., Loewenberg & Loewenberg, 111 W. Monroe St., Chicago 3, Ill., archts. CD 9/7/50.

Valenti Builders, 6022 W. Touhy Ave., Chicago, Ill., CA **$350,000**, 75 x 427 ft. 42 bedroom APARTMENT 6225-71 N. Cicero Ave., CHICAGO, ILL. LaSalle National Bank & Trust Co., c/o Valenti Builders, 6022 W. Toughy Ave., Chicago, Ill. Ray Basso & Assoc., 1543 Clinton Ave., River Forest, Ill., archt.

L. Korinek & Son, 1005 W. Clay St., Collinsville, Ill. LB **$798,785** general contract 2 story, 83,800 sq. ft. JUNIOR HIGH SCHOOL, on Bypass No. 66, EDWARDSVILLE, ILL. Edwardsville Community School Dist. 7, Bd. Educ., Edwardsville, Ill. Bids Aug. 29. CD 8/13.

Kenneth K. Katschke (builder), 8359 S. Pulaski Rd., Chicago, Ill. Own Forces **$475,000**, 25 HOMES, EVERGREEN PARK, ILL.

▲ **Shepherd Constr. Co.**, 1015 Plainfield Rd., Joliet, Ill. Own Forces. **$4,800,000**, 27 acre, Hillcrest SHOPPING CENTER, Plainfield and Larkin Rds. JOLIET, ILL. Scott S. Bigelow, 1015 Plainfield Rd., Joliet, Ill., archt.

Langlois Constr. Co., 207 S. Gilbert St., La Grange, Ill. LB **$488,800** general contract (40 bidders) 1 and 2 story, brick SCHOOL and ADMINISTRATION CENTER, LA GRANGE, ILL. School Dist. 2, Cossitt and Madison Sts., La Grange, Ill. Blds Sept. 5. CD 8/21.

▲ **Kenneth H. Katschke**, 8359 S. Pulaski Ave., Chicago, Ill. Own Forces. **$3,000,000**, 150 brick veneer front HOMES, celotex siding, 159 and Central Aves., OAK LAWN, ILL.

E. C. Knuth & Co., 2919 W. Fond du Lac Ave., Milwaukee, Wis., LB **$429,500** (14 bidders), general contract SHOP and TECHNICAL BLDG. addn., MILWAUKEE, WIS. Bd. Vocational & Adult Educ., 1015 N. 6 St., Milwaukee, Wis. Grassold-Johnson & Assocs., 734 N. Jefferson St., Milwaukee 2, Wis., archts. Bids Sept. 4.

▲ **Selzer-Ornst Co.**, 6222 W. State St., Wauwatosa 13, Wis., CA **$1,120,415**, 6 story, 50x180 ft. HOSPITAL alterations, addns., MILWAUKEE, WIS. Milwaukee Children's Hospital, 721 N. 17 St., Milwaukee 3, Wis. Bids July 15. CD 7/23;
Wenzel & Henock, 1524 N. 27 St., Milwaukee, Wis., CA **$667,744**, heating work (Milwaukee, Wis.).

Peters Constr. Co., 2640 N. Humboldt Ave., Milwaukee, Wis., CA Est. **$900,000**, crane runway and 98,000 ft. brick, steel and aluminum siding SHOP addn., MILWAUKEE, WIS. A. O. Smith Corp., 3533 N. 27 St., Milwaukee, Wis. Bids Aug. 29.

▲ **Meyer Corp.**, Hy. 41, Neenah, Wis., CA Est. **$2,500,000**, 7 story, 250,000 sq. ft. rein.-con. WAREHOUSE, NEENAH, WIS. Kimberly-Clark Corp., Neenah, Wis. J. Foley, c/o owner, engr.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
September 26 Minnesota, North Dakota

† **Iowa**—BA 10/2—U. S. Eng., 1709 Jackson St., Omaha 2, Neb., levees and channel alterations, Unit II, Sec. II, Little River, near Turin, CIVENG-25-066-59-24, $500,000-$600,000. CD 9/9/57.

▲† **Kan., Olathe**—TRAFFIC CONTROL CENTER—BA 10/3—General Services Admin., 2306 E. Bannister Rd., Kansas City, Mo., 51,000 sq. ft. air traffic control center, 2,100 sq. ft. engine-generator and garage for Civil Aeronautics Admin. $4,000,000. Plans deposit $50.

▲† **Minn., Farmington**—TRAFFIC CONTROL CENTER—BA 10/3—General Services Admin., 2306 E. Bannister Rd., Kansas City 14, Mo., 48,000 sq. ft. Air Route Traffic Control Center Bldg. (Type 2), 2,100 sq. ft. addnl. bldg. for comb engine-generator and garage for Civil Aeronautics Admin. $1,000,000-$1,100,000. Plans deposit $50. Thomas B. Bourne Assoc. Inc., Dupont Circle Bldg., Wash., D. C. archt. CD 8/13.

BUILDINGS—BA

Minn., St. Peter—CHAPEL—BA 9/24—Gustavus Adolphus College, 1 story, 112 x 112 ft. with spire 150 ft. high, chapel, $550,000. Magney, Tusler & Setter, 303 Roanoke Bldg., Minneapolis, archts. CD 9/20/56.

Tex., Snyder—SCHOOL—BA 9/25—Snyder Ind. School Dist., Snyder, Junior High School, $900,000. Fred Buford & Assocs., 500 Interurban Bldg., Dallas, archts. CD 12/12.

▲ **Tex., Mission**—POWER STATION—BA 9/30—Central Power & Light Co., 120 N. Chaparral St., Chicago, Ill., addn. to J. L. Bates Electric Power Station, Over $1,000,000. Sargent & Lundy, 147 S. Dearborn St., Chicago, Ill., engrs. CD 4/26/56.

▲ **Tex., Houston**—SCHOOL—BA 10/21—Houston Ind. School Dist., 1300 Capitol, 30 story, 185,000 sq. ft. Senior High School, Ella Blvd. and 34th St. $2,000,000. Extended date. Harwin C. Moore, 2006 W. Alabama St., coord. archt. Herbert Voelcker & Assocs., 1202 Dennis St., engrs. CD 9/4.

HEAVY CONSTRUCTION—LB & CA

IOWA—State Hy. Comn., Ames,
John P. Abramson Constr. Co., 9101 Hickman Rd., Des Moines, Iowa, CA **$811,491**, grading 2.512 mi. I-IG-35-3(2)77 (I-IG-02-3(2)), Polk Co. Bids Aug. 19. CD 8/26, under LB.

▲ **NORTH DAKOTA**—State Hy. Dpt., Bismarck,
N. D.—**Wm. Collins & Sons, Inc.**, 500 2 Ave. N., Fargo, N. D., CA **$253,876**, structural and incidental I-29-5 (9) 195, Pembina Co.;

N. D.—**Swingen Constr. Co.**, Hy. 2, W., Grand Forks, N. D., CA **$179,931**. structural and incidental I-29-5 (11) 211, Pembina Co.;

N. D.—**Tri-State Excavating Co.**, 500 N. 21 St., Fargo, N. D., CA **$817,149**, structural and incidental 0.183 mi. U.S. 85, Little Missouri River, south of Watford City F-350 (11) Mckenzie Co. Grand total $1,247,956. Bids July 25. CD 7/31, under LB.

▲ **NORTH DAKOTA**—State Hy. Dpt., Bismarck,
N. D.—**Tennefos Constr. Co., Inc.**, 2504 5 Ave. S., Fargo, N. D., CA **$379,084**, base, b. conc. surf. 20.199 mi. DF-123(7) and DF-254(13), Logan and McIntosh Counties;

N. D.—**Northern Imprvt. Co.**, 633 1st Ave. N., Fargo, N. D., CA **$663,977**, base, b. conc. 31.35 mi. DS-402(9) and SAP 402, Grant and Morton Counties;

N. D.—**Everetts, Inc.**, Jamestown, N. D., CA **$300,621**, base, b. conc. DS-423(6) and SAP 665, Williams Co. Grand total. $1,343,682. Bids Aug. 29. CD 9/5.

NORTH DAKOTA—State Hy. Dpt., Bismarck,
Northern Imprvt. Co., 633 1 Ave. N., Fargo, N. D. CA **$661,845**, c. conc., structures, tr., signal system street lighting 1.04 mi. U-136(8) and UG-136(9), Burleigh Co. Bids July 25. CD 7/31, under LB.

▲† **Parsons Constr. Co.**, 2512 Deer Park Blvd., Omaha, Neb. CA **$1,230,090** constr. SAC Control Center addn., ENG-25-066-58-120, Offutt Air Force Base, FORT CROOK, NEB. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids July 24. CD 7/31, under LB.

▲ **KANSAS**—State Hy. Comn., Kansas City, Bids opened 9/4,

L. G. Barcus & Sons, Inc., 1430 State Ave., Kansas City, Kan., LB **$1,128,611** (4 bidders), Unit No. 1-138 ft. 7-184 ft. 138 ft. steel girder; Unit No. 2-60 ft. 4-80 ft. 72 ft. 54 ft. steel beam bridge over Kansas River, southeast of Bonner Springs on new location K-7, Br. No. 7-105-0.03, Sta. 60 plus 26, SP No. 7-105 F 081-1(4), Wayndotte Co. CD 8/22.

KANSAS—State Hy. Comn., Kansas City, Bids opened 9/4,

J. A. Tobin Constr. Co., 3701 Rainbow Blvd., Kansas City, Kan., LB **$618,959** (4 bidders), grading, concrete paving, 0.36 mi. beginning on Muncie Expressway and Splitlog Ave. extending northerly Interstate 70 to point near west end of Inter-city Viaduct, SP No. 70-105-I 70-6(8) 423, Wyandotte Co. CD 8/22.

Graver Tank & Mfg. Co., East Chicago, Ind. LB **$154,715** Cont. 1, WW extension, incl. 1 m.g. storage tank on tower, HUTCHINSON, KAN. City, City Hall, Hutchinson, Kan. Black & Veatch, 1500 Meadow Lake Parkway and P. O. Box 8405, Kansas City, Mo., engrs. CD 5/8.

Hoffman & Borders, 3904 Huaco Lane, Waco, Tex., CA **$786,600**, 25 m. g. Southcliff Reservoir, Houston School Rd., DALLAS, TEX. City, City Hall, Dallas, Tex. Bids Aug. 18. CD 8/28, under LB.

COLORADO—State Hy. Dpt., 4201 East Arkansas, Denver,
Shore-Bailey Constr. Co., 510 S. Windermere, Littleton, Colo. CA **$401,693**, est. $412,000, grading, stabilization, structures and plant mixed asph. surf. 5.17 mi. Colo., Proj. F-25-2 (1) Conejos Co. Mark U. Watrous, st. hy. engr. Bids Sept. 4. CD 8/27.

Border Constr. Co., Joe Brand Bldg., Laredo, Tex., CA **$517,210**, asph. paving 168 blocks, LAREDO, TEX. City, City Hall, Laredo, Tex. Bids Aug. 26. CD 9/4, under LB.

COLORADO—State Hy. Dpt., 4201 East Arkansas, Denver,
Colorado Constr. Inc., 725 W. 39 Ave., Denver, Colo. CA **$118,321**, est. $134,000 stabilization and plant mixed asph. surf. 7.331 mi. Colo. Proj. No. DF 01601 (9) Bids Sept. 3. CD 8/27.

BUILDINGS—LB & CA

Baukol Constr. Co. Inc., 1201 Dyke Ave., Grand Forks, N.D., CA **$718,800**, general contract Birch Hall DORMITORY addn. and MEN'S DORMITORY BLDG. at Bemidji State College, BEMIDJI, MINN. State College Bd., 41 Sherburne Ave., St. Paul, Minn. Bids Aug. 27 CD 9/5, under LB.

Hankee Heating Co., First National Bank Bldg., St. Paul, Minn., CA **$923,744**, mechanical work 5 story, bsmnt. addn. John Gregory Murray Unit to HOSPITAL; remodel north wing and main structures, ST. PAUL, MINN. St. Joseph's Hospital, 69 West Exchange St., St. Paul, Minn. Bids Aug. 26. CD 9/4, under LB.

▲ **Standard Constr. Co.**, 250 Builders Exchange Bldg., Minneapolis, Minn., CA **$4,100,000**, general constr. 5 story, bsmnt. addn. John Gregory Murray unit to HOSPITAL, ST. PAUL, MINN. St. Joseph's Hospital, 69 West Exchange St., St. Paul, Minn. Bids Sept. 4. CD 8/25.

▲ **J. E. Dunn Constr. Co.**, 929 Holmes St., Kansas City, Mo., CA **$2,799,966**, Pennway Plaza Housing Proj. 250 units in 42 bldgs., 2 story constr., face brick concrete block, precast concrete, KANSAS CITY, MO. Kansas City Housing Auth., 1220 Independence Ave., Kansas City, Mo. Bids Aug. 12. CD 8/28, under LB.

Glaze Constr. Co., 602 N. 2nd St., St. Joseph, Mo., CA Est. **$400,000**, 200 x 224 ft., 40,000 sq ft. concrete block, brick veneer WAREHOUSE addn., 101 W. July St., ST. JOSEPH, MO. Gerber Products Co., 10600 Puritan, Detroit, Mich.

▲ **Huber, Hunt & Nichols, Inc.**, 2450 S. Tibbs Ave., Indianapolis 6, Ind., CA general contract 1 story, 300,000 sq. ft. face brick, glass and aluminum air-conditioned PORTABLE TYPEWRITER PLANT (2 bldgs. connected, 1 for manufacturing and 1 for administrative), SPRINGFIELD, MO. Royal McBee Corp., Westchester Ave., Port Chester, N. Y. Total est. $3,000,000. Bids Aug. 19, CD 8/13;
Allied Structural Steel Co., 20 N. Wacker St., Chicago, Ill., structural steel for portable typewriter plant (Springfield, Mo.).

Messina Bros. Constr. Co., Inc., 1200 E. 8th St., Kansas City 6, Mo., CA **$545,084**, reconstr. BUILDINGS at Women's Prison, TIPTON, MO. State of Missouri, Div. P. Bldgs., 100 State Capitol, Jefferson City, Mo. Bids July 29. CD 8/5, under LB.

George H. Burden Co., East Capitol and McLean Sts., Little Rock, Ark., CA **$500,000**, 120,000 sq. ft. WAREHOUSE AND OFFICE BLDG., parking facilities for 100 autos, LITTLE ROCK, ARK. Sterling Stores Co., Inc., and Cash Wholesale Co., 304 Rock St., Little Rock, Ark. Erhart, Eichenbaum, Rauch & Blass, 201 Chester St., Little Rock, Ark., archts. Awarded Aug. 30.

Dickman-Pickens & Bond Constr. Co., Gazette Bldg., Little Rock, Ark., LB **$770,540**, (5 bidders), 3 story MEN'S RESIDENCE HALL, 3 story WOMEN'S RESIDENCE HALL, and 1 story STUDENT CENTER, LITTLE ROCK, ARK. Philander Smith College, 812 W. 13 St., Little Rock, Ark. Bids Aug. 28. CD 8/20.

Archie C. Fitzgerald, Box 101, Austin, Tex., CA **$763,300** general contract CHURCH, AUSTIN, TEX. St. Martin's Evangelical Lutheran Church, 14th and Congress Ave., Austin, Tex. CD 8/15, under LB.

H. A. Lott, Inc., P. O. Box 25005, Houston 5, Tex., LB **$699,341**, 80 HOUSING UNITS, Tex. 12-3, BAYTOWN, TEX. Baytown Housing Auth., Baytown, Tex. Bids Sept. 3. CD 8/29.

▲ **Inwood Constr. Co.**, Trinity Universal Bldg., Dallas Tex., LB **$453,778**, general contract 56-unit married students DORMITORY-APARTMENT. LB **$694,796** general contract men's DORMITORY, DALLAS, TEX. Southern Methodist University, Campus, Dallas, Tex. Bids Aug. 28. CD 8/18;
Hal C. Dyer, Lone Star Gas Bldg., Dallas, Tex., LB **$496,000** women's DORMITORY (Dallas, Tex.).

▲ **Rice Building Co.**, 705 Holmes Rd., Houston, Tex., Owner Builds **$361,175**, 28 DWELLINGS; $352,000 32 DWELLINGS; $345,500, 26 DWELLINGS, HOUSTON, TEX. Grand total $1,058,675. CD 9/8.

Arthur Brothers, Inc., Box 792, Kingsville, Tex. LB **$455,932** est. $400,000, 13 one story bldgs., 40 units, Student Family APARTMENTS, KINGSVILLE, TEX. Texas College of Arts & Industries, Kingsville, Tex. Jessen, Jessen, Millhouse & Greeven, 2816 Hemphill Park, Austin, Tex., archts.

▲ **Pecan Heights Development Corp.**, McAllen, Tex., cancelled bids, SHOPPING CENTER, MCALLEN, TEX. Est. **$1,750,000**. CD 7/11.

H. P. Orts Constr. Co., 939 Rittiman Rd., San Antonio, Tex. Own Forces, **$371,000**, 33 DWELLINGS, SAN ANTONIO, TEX. (Correction—cost). CD 9/10, under CA.

Haggerty-Messmer Co., Bozeman, Mont., CA **$950,000**. general constr. WOMEN'S RESIDENCE HALL, Montana State College, BOZEMAN, MONT. Montana State Bd. Educ., Helena, Mont. Bids July 14. CD 7/21, under LB.

Weaver Constr. Co., 5555 E. Evans, Denver, Colo. CA **$899,450** general contract remodeling and addns. to North HIGH SCHOOL, incl. boys' and girls' gymnasium, 2 auxiliary gymnasiums, swimming pool, additional 17 classrooms, DENVER, COLO. School Dist. No. 1, 414 14th St., Denver, Colo. CD 8/28.

† **Nuchols Air-Cond. Co., Inc.**, Box 609, Waco, Tex., LB **$429,658**, air-conditioning and related work on U. S. POST OFFICE and COURTHOUSE, ALBUQUERQUE,, N. M., General Services Admin., Federal Center, Denver, Colo.

FAR WEST

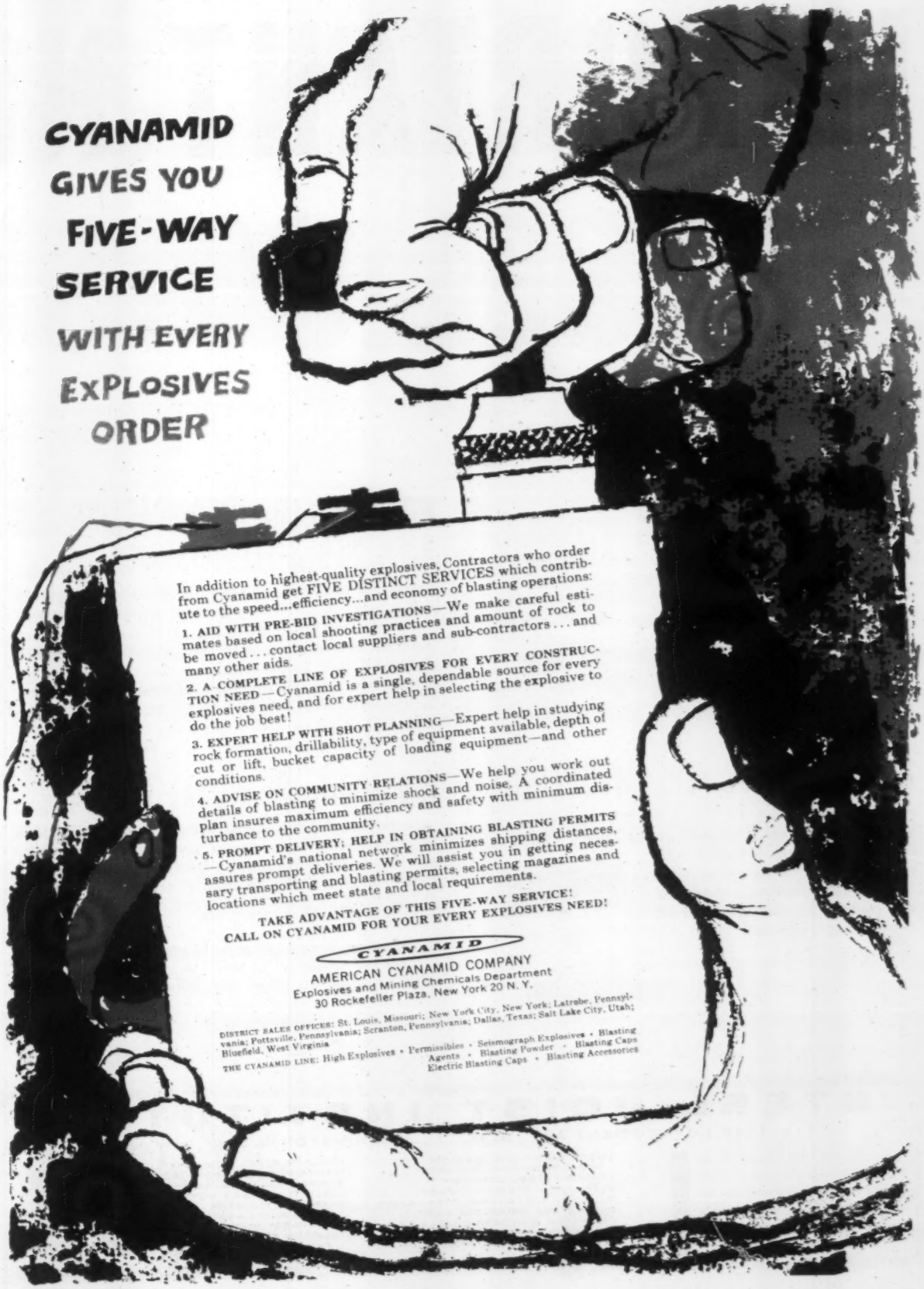
HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
October 8, 9 California
STREETS AND ROADS
September 30 Idaho **October 1, 2, 8, 9 California**

Calif., Los Angeles—BA 10/3—Los Angeles County Flood Control Dist., 2250 Alcazar St., Proj. 89 Barry Ave. Braddock Dr. and Kelto Ave. storm drains, Culver City, $458,000. Plans deposit $2.60. CD 11/7/52.

(Continued on page 176)

CYANAMID GIVES YOU FIVE-WAY SERVICE WITH EVERY EXPLOSIVES ORDER



In addition to highest-quality explosives, Contractors who order from Cyanamid get FIVE DISTINCT SERVICES which contribute to the speed...efficiency...and economy of blasting operations:

1. AID WITH PRE-BID INVESTIGATIONS—We make careful estimates based on local shooting practices and amount of rock to be moved . . . contact local suppliers and sub-contractors . . . and many other aids.

2. A COMPLETE LINE OF EXPLOSIVES FOR EVERY CONSTRUCTION NEED—Cyanamid is a single, dependable source for every explosives need, and for expert help in selecting the explosive to do the job best!

3. EXPERT HELP WITH SHOT PLANNING—Expert help in studying rock formation, drillability, type of equipment available, depth of cut or lift, bucket capacity of loading equipment—and other conditions.

4. ADVISE ON COMMUNITY RELATIONS—We help you work out details of blasting to minimize shock and noise. A coordinated plan insures maximum efficiency and safety with minimum disturbance to the community.

5. PROMPT DELIVERY; HELP IN OBTAINING BLASTING PERMITS—Cyanamid's national network minimizes shipping distances, assures prompt deliveries. We will assist you in getting necessary transporting and blasting permits, selecting magazines and locations which meet state and local requirements.

TAKE ADVANTAGE OF THIS FIVE-WAY SERVICE!
CALL ON CYANAMID FOR YOUR EVERY EXPLOSIVES NEED!

CYANAMID

AMERICAN CYANAMID COMPANY
Explosives and Mining Chemicals Department
30 Rockefeller Plaza, New York 20 N. Y.

DISTRICT SALES OFFICES: St. Louis, Missouri; New York City, New York; Latrobe, Pennsylvania; Pottsville, Pennsylvania; Scranton, Pennsylvania; Dallas, Texas; Salt Lake City, Utah; Bluefield, West Virginia

THE CYANAMID LINE: High Explosives • Permissibles • Seismograph Explosives • Blasting Agents • Blasting Powder • Blasting Caps Electric Blasting Caps • Blasting Accessories

IMPORTANT NE
STEEL JOIST

1 DESIGN

Architects and engineers now are offered all types of SJI Approved open web steel joists, based upon 20,000 psi working stress. Open web steel joists approved by the Institute are thus in balance with all other steel used in structures. Greater economy and a more efficient use of steel results.

2 COMBINED SPECIFICATIONS

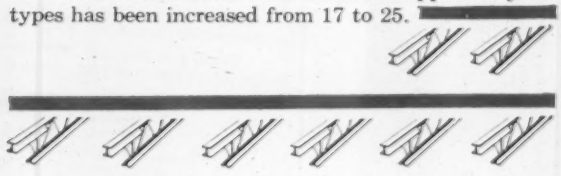
Specifications and load tables for all types of open web steel joists are combined in one handy reference for the designing architect and engineer. "S" series and "L" series joists uniformly designed are covered in this one over-all standard specification.

3 NEW SIMPLIFIED MARKING FOR OPEN WEB STEEL JOISTS

To simplify the designation and type mark of steel joists of all types and spans, a uniform system of marking has been adopted. The depth and series identification is incorporated in one type mark to give the designer a uniform system for identification. For example, an "S" series joist, formerly identified as type SJ102 will now be known as 10S2, or a 10″ deep joist of the "S" series and a #2 chord section. A joist identified as 24L06 is a 24″ deep, "L" series joist of a #6 chord section.

4 EIGHT ADDITIONAL TYPES

To provide greater flexibility and a more exact application of open web steel joists for given structural loads, the "S" series of Steel Joist Institute Approved joist types has been increased from 17 to 25.



STEEL JOIST INSTITUTE

1346 CONNECTICUT AVE., N. W. • WASHINGTON 6, D. C.

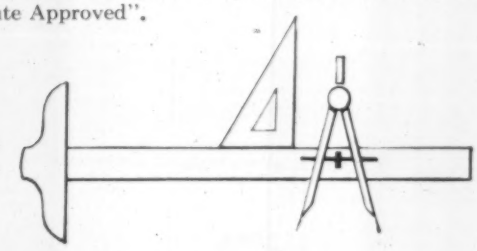
Steel joists of the designations adopted by the Steel Joist Institute and manufactured by the following companies have been investigated and approved by the Steel Joist Institute:

AMERICAN BRIDGE DIVISION
United States Steel Corporation
ARBUTUS STEEL COMPANY
BETHLEHEM STEEL COMPANY
BUILDERS STRUCTURAL STEEL CORP.
CECO STEEL PRODUCTS CORP.
COLORADO BUILDERS SUPPLY CO.
CONCRETE STEEL COMPANY
JOHN HANCOCK, JR., INCORPORATED
LACLEDE STEEL COMPANY
MACOMBER INCORPORATED
ROBBERSON STEEL COMPANY
JOS. T. RYERSON & SON, INC.
SHEFFIELD DIVISION
Armco Steel Corporation
SOUTHWEST STEEL PRODUCTS
TRUSCON STEEL DIVISION
Republic Steel Corporation
VIRGINIA STEEL COMPANY

WS FROM THE INSTITUTE

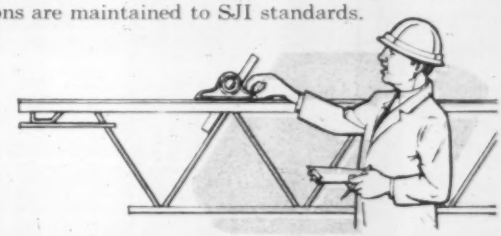
5 ENGINEERING DESIGN CHECK ..."L" SERIES

To assure designers and specifiers of "L" series open web steel joists of proper uniform design properties, an engineering design check on such joists has been developed by the Steel Joist Institute and will be required before a manufacturer is permitted to indicate his product as "Steel Joist Institute Approved".



6 QUALITY VERIFICATION PROGRAM..."S" SERIES

A Quality Verification Program on all Steel Joist Institute Approved "S" series open web steel joists assures designers and code authorities that these structural members have not only been checked for design and load bearing ability but are subject to a continuing program of inspection by an independent laboratory at the Steel Joist Institute member company plants, to provide assurance that actual fabrication and production conditions are maintained to SJI standards.



7 NEW LOAD AND SPACING TABLES

Although the SJI Approved open web steel joists to be manufactured under the new SJI Standard will not be available from member companies before January 1, 1959, a new comprehensive load and spacing table is offered the architects and engineers for use as of October 1, 1958. This will permit inclusion of the construction economies of the new balanced design steel joists in many structures now in the planning stage.

STEEL JOIST SJI APPROVED INSTITUTE © SJI

FREE! *Write for new standard specifications and load tables.*

See our insert in Sweet's Architectural File 2c/St

STEEL JOIST INSTITUTE
1346 Connecticut Ave., N.W.
Washington 6, D. C.

☐ Please send me a copy of your new Standard Specifications and Load Tables.

Name_____
Company_____
Address_____
City_____ Zone____ State_____

(Continued from page 172)

Idaho, Payette—BA 10/7—City, City Hall, sewer lines and sewage disposal plant. $435,000. CD 3/18.

BUILDINGS—BA

▲ **Calif., Westminster**—SCHOOL—BA 9/30—Westminster School Dist., 1421 Cedarwood Ave., Johnson Intermediate School. $1,000,000. Lee B. Kline, 963 West Colorado Blvd., Los Angeles, archt.

▲ **Calif., Los Angeles**—SCHOOL—BA 10/3—Bd. Educ., 1425 S. San Pedro, Henry Junior High School, Granada Hills, $2,225,000. Weston & Marston, 1741 Silver Lake Blvd., archts. CD 6/9.

HEAVY CONSTRUCTION—LB & CA

City, City Hall, Reno, Nev., rejected bids, airport imprvs. (terminal site development-grading clearing, excavation, paving of taxiways and aprons RENO NEV. CA $546,621. (Correction—status). CD 7/3, under CA.

F. Coluccio Constr. Co., 7778 Seward Park Ave., Seattle, Wash. LB $264,595, (7 bidders), constr. 3600 ft. spillway line near McMillin reservoir, TACOMA, WASH. City, City Hall, Tacoma, Wash. Bids Sept. 2. CD 8/21.

CALIFORNIA—Dpt. P. Wks., 1120 N St., Sacramento, **J. A. Paton**, P. O. 207, Riverside, Calif., CA $853,524, grading, surf. to constr. 5.3 mi. 2 lane hy. on State Sign Rte. 71 between State Hy. Route 192 (Euclid Ave.) and Merrill Ave., near Chino, San Bernardino Co. Bids Aug. 21, awarded Sept. 4. CD 8/27, under LB.

▲† **Alwood Corp.**, 203 E. Broadway, Glendale, Calif., CA $2,527,799, channel works, Westwood Branch, Pico to National Blvds., ENG-04-353-58-25, CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Aug. 19. CD 8/22, under LB.

† **H. Earl Parker Inc.**, 12 and F Sts., Marysville, Calif. LB $672,732 (4 bidders) levee constr. right bank Sacramento River at various locations between Colusa and Knights Landing, Serial No. ENG-04-167-59-2 CALIFORNIA. U. S. Eng., 1209 8 St., Sacramento, Calif. Bids Sept. 4. CD 8/19.

▲† **Price-McNeamer Constr. Co.** 13726 Saticoy St., Van Nuys, Calif. CA $1,328,000, conversion to Hercules at Special AAA sites Los Angeles and Orange Counties, ENG-04-353-58-101, CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids June 27 CD 7/3, under LB.

† **A. Teichert & Son Inc.**, P. O. Box 397, Baldwin Park, Calif., CA $929,294, Rubio Canyon diversion channel, Pasadena, Los Angeles Co., CIVENG-04-353-59-1, CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Aug. 21. CD 8/1.

Contractors Asphalt Sales Co., 18101 Hawthorne Blvd., Redondo Beach, Calif. CA $164,327 imprv. portions of Prairie Ave. and Manhattan Beach Blvd., Lawndale, LOS ANGELES, CALIF. Los Angeles Co., Hall of Records, Los Angeles, Calif. Bids Aug. 19, awarded Aug. 26.

A-1 Contractors Inc., 2935 Sawpit Rd., Monrovia, Calif. CA $124,664. imprv. Hacienda Blvd., Valley Blvd. to Nelson Ave., La Puente. Bids Aug. 26, awarded Sept. 2. (Los Angeles, Calif.).

Griffith Co., 1060 S. Broadway, Los Angeles, Calif., LB $329,982 (7 bidders), imprv. Wentworth St., Foothill Blvd. to Stonehurst Ave., LOS ANGELES, CALIF. City, City Hall, Los Angeles, Calif. Bids Aug. 27;

B. H. Mollett, 1603 Hillcrest Ave., Glendale, Calif., LB $114,831 (5 bidders), imprv. Airport Blvd., La Tijera to Century Blvds. (Los Angeles, Calif.).

Vega Eng. & Grading Co., Box 502, Tustin, Calif. CA $144,191 (4 bidders) excavating temporary earth channel in North Fork of Coyote Creek, Santa Fe Springs, LOS ANGELES, CALIF. Bd. Supervs. Los Angeles Co., Hall of Records, Los Angeles, Calif. Bids Aug. 22. CD 7/30.

† **Alco Corp.**, 5423 Flemish Lane, Los Angeles, Calif. CA $961,452, constr. various buildings at Naval Missile Facility, Point Arguello Naval Air Missile Test Center, Spec. 19386/58, POINT MUGU, CALIF. Eleventh Naval Dist. 1220 Pacific Hy., San Diego, Calif. Bids June 25. CD 7/16, under LB.

A. Dale Williams Co., 299 Belmar Ave., Daly City, Calif. LB $207,942. (5 bidders) grading, paving road and streets, curbs, sidewalks, sewers, street signs, retaining walls, etc. Industrial Park Imprvt. Dist. No. 3, SOUTH SAN FRANCISCO, CALIF. City, City Hall, South San Francisco, Calif. CD 1/7.

BUILDINGS—LB & CA

G. E. Teufel Co., White-Henry-Stuart Bldg., Seattle 1, Wash., CA $985,000, general constr. five 116,000 sq. ft. masonry bldgs. for HIGH SCHOOL with steam heating sys., BELLEVUE, WASH. School Dist. 405, Bellevue, Wash. Bids July 15. CD 7/22, under LB.

▲ **Paul B. Emerick Co.**, 4540 E. 174 Ave., Portland, Ore. CA $1,365,000, DAIRY PLANT addn., PORTLAND, ORE. Dairy Co-Operative Assoc., 2700 S.E. 6th Ave., Portland, Ore. Bids July 9. CD 7/16, under LB.

Indian Springs Elementary School Dist., Big Bend, Calif., rejected bids Indian Springs SCHOOL NATATORIUM, BIG BEND, CALIF. LB $429,890. CD 9/8, under LB.

▲ **R. A. Watt**, 7862 S. Western Los Angeles, Calif. CA $1,395,300 127 DWELLINGS, LA MIRADA, CALIF. Ermelita Corp., 7862 S. Western Ave., La Mirada, Calif.

Seven Hills Ranch, 1166 E. 58th Los Angeles, Calif. CA $594,300 59 DWELLINGS, Sanbrook, Fairhope, Hayford, Lomela, LA MIRADA, CALIF. Monterey Bldg. Co., 1166 E. 58th, Los Angeles, Calif.

Smith-Campbell Co., 6510 Cherry Ave., Long Beach, Calif., LB $688,000 (10 bidders) Los Altos HIGH SCHOOL ADDNS. Increment No. 2, LA PUENTE, CALIF. La Puente Union High School Dist., 15615 E. Nelson Ave., La Puente, Calif. Bids Aug. 26. CD 7/31.

▲ **R. A. Watt**, 7862 S. Western, Los Angeles, Calif. CA $1,057,950, 102 DWELLINGS, Fairgrove, Tonopak, Rath Clintwood, LA PUENTE, CALIF. Hopland Land Co., 7862 S. Western Ave., La Puente, Calif.

† **Ralph Larsen & Son**, 64 S. Park St., San Francisco, Calif. CA $713,713, 2 rein.-con. bunkers, access roads, utilities, LIVERMORE, CALIF. U. S. Atomic Energy Comn., 518 17th St., Oakland, Calif. CD 7/7, under LB.

▲ **Crown Constr. Co.**, 5059 West Pico Blvd., Los Angeles, Calif. LB $2,369,871 (5 bidders) Sepulveda JUNIOR HIGH SCHOOL, LOS ANGELES, CALIF. Los Angeles Bd. Educ., 1425 S. San Pedro, Los Angeles, Calif. Bids Sept. 5. CD 8/12.

P & A Constr. Co., 4565 Santa Monica Blvd., Los Angeles, Calif. LB $444,949 (11 bidders) Wilbur Ave. SCHOOL, LOS ANGELES, CALIF. Bd. Educ., 1425 S. San Pedro St., Los Angeles, Calif. Bids Aug. 21. CD 8/6.

▲ **Henderson Constr. Co.**, 33 Ritch St., San Francisco, Calif., CA $1,179,300, Sobrante Park JUNIOR HIGH SCHOOL, OAKLAND, CALIF. Oakland City Unif. School Dist., c/o Supt., 1025 2 Ave., Oakland, Calif. CD 9/3, under LB.

Taylor & Clark, 10691 Magnolia Ave., Arlington, Calif., LB $979,967 (7 bidders), Arlington JUNIOR HIGH SCHOOL, RIVERSIDE, CALIF. Riverside High School Dist., 3954 12 St., Riverside, Calif. Bids Aug. 27. CD 7/23.

▲ **Mexico Refractories Co.**, Mexico, Mo., Own Forces $2,000,000, REFRACTORIES MFG. PLANT, STOCKTON, CALIF. CD 8/28.

▲ **Oliver Constr. Co.**, 1827 West 145 St., Gardena, Calif. LB $1,614,195 (8 bidders), constr. third increment at South HIGH SCHOOL, TORRANCE, CALIF. Torrance Unified School Dist., Torrance, Calif. Bids Sept. 10. CD 8/22.

Woodland Homes, 8660 Wilshire Blvd., Beverly Hills, Calif. Owner Builds. $874,900, 78 stucco DWELLINGS, Larkwood Ave., Desert Dr., De Govia Ave., Cumorah Crest Dr., Heiss St., WOODLAND HILLS, CALIF.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES
October 1 Ontario

STREETS AND ROADS
October 1, 8 Ontario

Ont., Toronto—RACE TRACK—BA 9/25—Ontario Jockey Club, Ltd., Box 160, Downsview, Ont., Woodbine race track addns., 150x320 ft. grandstand addn. $400,000. Earl C. Morgan, 709 Church St., archt. M. S. Yolles & Assoc., 111 Richmond St., W., engr. CD 3/4/53.

BUILDINGS—BA

Ont., Brampton—INDUSTRIAL, etc.—BA 9/23— Bramtor Ltd., c/o Barnett & Rieder, archts., 96 Eglinton Ave. E., Toronto (selected list of 8 bidders) 1 story, no bsmnt., 170 x 283 ft., concrete, concrete block, structural steel frame industrial bldg.; 1 story, bsmnt., 42 x 125 ft. office sect. $450,000. C. D. Carruthers & Wallace Consultants Ltd., 92 Yorkville Ave., Toronto, engrs.

▲ **Que., Montreal**—HOUSING—BA 9/25—City, Central Mortgage & Housing Corp., 5801 Monkland Ave., four 12 story apartments; one 14 story, apartment Jeanne Mance low rental Housing, 132 three story apartments, six 3 story row houses, $16,000,000. Greenspoon, Freedlander & Dunne and Jacques M. Morin, 2165 Clifton Ave., archts. Pierre d'Allemagne, 3180 Van Horne Ave., engr. Bids Aug. 12 rejected. CD 8/20, under LB and City, City Hall, as owner.

▲ **Que., Montreal**—HIGH SCHOOL—BA 10/14—Montreal Protestant Bd. School Comrs., 3460 McTavish St., high school, Sherbrooke St. E., $1,000,000. Plans deposit $200. deBelle & White, 5925 Monkland Ave., archts. Henry Jasen, 1410 Guy St., engr. CD 2/18.

HEAVY CONSTRUCTION—LB & CA

▲ **Queensview Construction & Development Ltd.**, 525 Bank St., Ottawa, Ont., CA $3,441,865, filtration plant to pump 421 m.g.d. at Britannia, OTTAWA, ONT. Bd. Control, City of Ottawa, City Hall, Ottawa, Ont. Awarded Sept. 3. CD 7/31, under LB.

▲ **Foundation Co. of Canada Ltd.**, 1220 Bay St., Toronto, Ont., LB $1,024,902, Frederick G. Gardiner Expressway elevated substructure, roadwork, excavation, drainage, retaining walls, concrete curb and gutter, concrete base asphaltic concrete structure, TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St. E., Toronto, Ont. Bids Sept. 2. CD 8/14.

Montreal Dual Mixed Concrete Ltd., 3701 Cote St. Michel Rd., Montreal, Que., CA $495,682, pavements and sidewalks, various locations, MONTREAL, QUE. City of Montreal, City Hall, Montreal, Que. Grand total $832,595. Awarded Sept. 4. CD 4/1;

Asphalt Paving Ltd., 150 St. Viateur St. E., Montreal, Que., CA $154,769, pavements and sidewalks (Montreal, Que.);

Roger P. Bouclay, 3560 Blvd. St. Joseph E., Montreal, Que., CA $93,464, paving and sidewalks, various locations (Montreal, Que.);

Les Enterprises Frontenac Ltd., 7140 Park Ave., Montreal, Que., CA $88,680, pavements and sidewalks, various streets (Montreal, Que.).

Union Quarries & Paving, Ltd., 496 2 Ave., Quebec City, Que., LB $567,343 (26 bidders) Queen's Wharf exten., QUEBEC CITY, QUE. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Bids Sept. 3. CD 8/7.

Pointe Claire Asphalt & Constr. Reg'd., 12 Ave. Bons Pasteur, Laval des Rapids, Que., CA $262,000, pavements, etc. ROXBORO, QUE. Town of Roxboro, Town Hall, Roxboro, Que. Cartier, Cote & Piette, 366 Lafleur Ave., LaSalle, Que., engrs. Award Aug. 27.

BUILDINGS—LB & CA

Montclair Constr. Co. Ltd., 5515 Upper Lachine, Montreal, Que., CA $483,500 (8 bidders), constr. Class 1, 19 classroom SCHOOL, coal-fired, standard masonry with related services, Canadian Army Camp, CAMP GAGETOWN, N. B. Defence Construction (1951) Ltd., 56 Lyon St., Ottawa, Ont. Bids Aug. 19, awarded Sept. 2. CD 8/5.

Grand Avenue Investments, 33 Sultan Ave., Toronto 19, Ont., Owner Builds, $900,000, two 6 story, bsmnt., 79x120 ft. multi family DWELLINGS, Grand Ave., LONDON, ONT. E. Richmond, c/o owner, archt.

George Wimpey & Co., Ltd., 80 North Queen St., Islington Ont., LB $747,012 (15 bidders) constr. ASSEMBLY and TEST BLDG. and hangar, MALTON, ONT. R. C. A. Victor Co., Ltd., c/o Defence Construction (1951) Ltd., 56 Lyon St., Ottawa, Ont. Bids Aug. 28. CD 8/15.

Varamae Constr. Co., Ltd., 250 Merton St., Toronto, Ont., CA $519,241 (14 bidders) 3 story classroom area; 1 story, 108x310 ft. poured concrete foundation, rein.-con. columns, administration and kindergarten area, Regent Park Public SCHOOL, TORONTO, ONT. Toronto Bd. Educ., 155 College St., Toronto, Ont. Bids Aug. 12, awarded Aug. 22. CD 7/25.

Byers Constr. Co., Ltd., 5675 Upper Lachine Rd., Montreal, Que., CA Est. $250,000, 3 story, 85x90 ft. DISTILLERY addn., MONTREAL, QUE. Distillers Corp., Ltd., Lefleur Ave., Ville La Salle, Montreal, Que. Brian R. Perry, 1186 St. Catherine St. W., Montreal, Que., engr. Awarded Aug. 21.

▲ **Facteau et Frere Constr. Ltee.**, 11945 Poincare St., Montreal, Que., CA $3,000,000, 88 duplex HOUSING program, Muir St. and Cote Vertu, MONTREAL, QUE. Mana Constr. Ltee., 11945 Poincare St., Montreal, Que.

▲ **Yale Enterprises Ltd.**, 1231 St. Catherine St. W., Montreal, Que., Owner Builds $1,500,000, 10 story, rein.-con. frame, stone face, air conditioned OFFICE BLDG., rein.-con. fdn., corner Sherbrooke and Drummond Sts., MONTREAL, QUE. CD 5/2.

Monarch Constr. (Quebec) Ltd., Souvenir Rd., St. Martin, Que., CA Est. $480,000, HOUSING PROGRAM, Souvenir Rd. Development, ST. MARTIN, QUE. Robillard Development Corp., Souvenir Rd., St. Martin, Que. H. M. Tolchinsky, 5810 Cote St. Luc Rd., Montreal, Que., archt. C. E. Gravel, L'Abord a Plofle, Que., engr. Awarded Aug. 28.

▲ **Societee D'Habitation Nationale du Quebec, Inc.**, 5333 Pare St., Montreal, Que., CA Est. $1,782,000, one hundred sixty-two, 24 x 46 ft. BUNGALOWS, concrete fdn., brick walls, housing development. ST. THERESE DE BLAINVILLE, QUE. Blainville Homes Development Corp., 5333 Pare St., Montreal, Que. Awarded Sept. 3.

▲ **Canadian Kellogg Co., Ltd.**, 33 Bloor St. E., Toronto 5, Ont., CA $2,500,000 (4 bidders) 3,000 b/d powerformer for REFINERY, REGINA, SASK. Imperial Oil Ltd., 500 Winnipeg St., Regina, Sask. Awarded Aug. 30. CD 6/5.

ALASKA

† **Alaska, Naknek**—POL TANK SYSTEM—BA 10/1—Procurement Officer, Elmendorf Air Force Base, modify POL tank sys., King Salmon Air Force Station, INV-59-38. CD 8/22/55.

HEAVY CONSTRUCTION—LB & CA

† **ALASKA**—Bureau P. Rds., Dpt. Commerce, Federal Bldg., Juneau, Bids opened 9/2,

M-B Contracting Co., Lloyd Bldg., Seattle 1, Wash., LB $965,807, est. $1,251,576, (6 bidders), grading, draining 15.3 mi. Sterling Hy. between Anchor Point and Homer, with 80 ft. steel bridge over Anchor River, Proj. F-021-1(1). CD 8/15.

† **ALASKA**—Bureau P. Rds., Dpt. Commerce, Federal Bldg., Juneau, Bids opened 9/2,

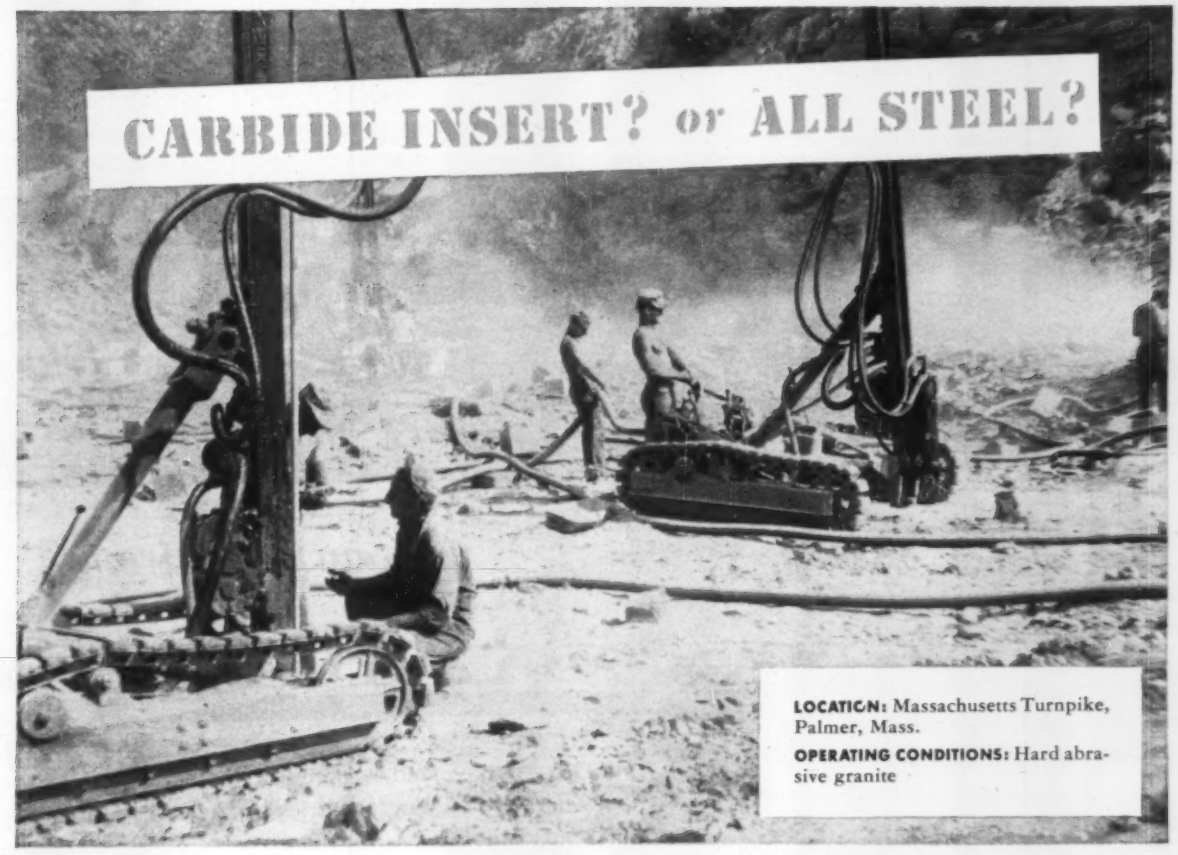
M-B Contracting Co., Lloyd Bldg., Seattle 1, Wash., LB $264,605, est. $424,795, (9 bidders), grading, bit. surf. 5.9 mi. road between Seward-Anchorage Hy. and Portage Glacier Lake, Proj. 35-A, Contr. 1, and Alaska Fire Development Rd. Proj. 0802. CD 8/20.

† **ALASKA**—Bureau P. Rds., Dpt. Commerce, Juneau, Bids opened 9/2,

Manson-Osberg Constr. Co., 1132 N. 128 St., Seattle 33, Wash., LB $680,402, est. $640,816, (6 bidders), clearing, grubbing, grading Mitkof Hy. south 6.6 mi. from Petersburg to Blind Slough Forest Hy. Proj. 7-G and DS-0937(3). CD 8/22.

▲† **Marwell Constr. Co., Inc., & Foster Saunders, Inc.**, 1312 10 Ave., Anchorage, Alaska, (joint venture) LB $2,260,063, est. $2,000,000, (8 bidders), hydroelectric power project, incl. 8 mi. gravelled road, 5,000 ft. tunnel and concrete intake structure and conduit, Cooper Lake, ALASKA. Chugach Electric Assocn., 8 and Gambell Sts., Anchorage, Alaska. Bids Sept. 9. CD 9/4.

(Proposal Advertisements see pp. 190 and 191)


CARBIDE INSERT? or ALL STEEL?
LOCATION: Massachusetts Turnpike, Palmer, Mass.
OPERATING CONDITIONS: Hard abrasive granite

Grandview Construction Corporation sped deep hole drilling on Mass. Turnpike with Timken® carbide insert bits

GRANDVIEW Construction Corporation had to drill extremely deep holes through hard abrasive granite on its sections of the 123-mile Massachusetts Turnpike. To get speediest drilling at the most economical cost, Grandview used Timken® carbide insert bits. They got maximum production, kept bit cost per foot-of-hole at rock bottom.

For economical drilling in hard, abrasive ground, Timken carbide insert bits are your best bet. But carbide bits may not be the best choice for *every* job.

In ordinary ground, you get more economical results with Timken all steel multi-use bits. Correctly controlled and reconditioned, they give you lowest cost per foot-of-hole when you can drill out full increments of drill steel.

With Timken carbide insert and all steel multi-use bits, your drillers save time. Dozens of different bits fit the *same* drill steel, let you switch bits fast as the ground changes. And both types of bits have a special shoulder union that protects threads against drilling impact.

Timken rock bits are made from electric furnace Timken fine alloy steel. We're America's only rock bit manufacturer that makes its own steel.

For expert help on selecting the best bit type for your drilling jobs, write The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".

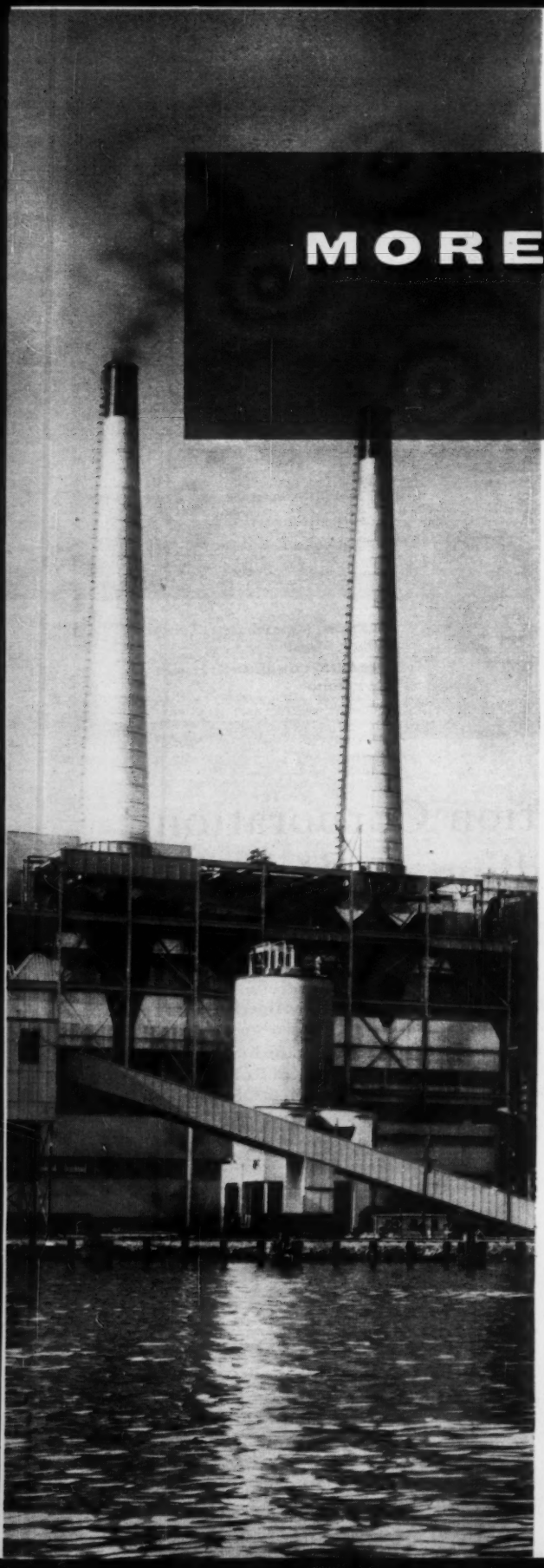
Timken threaded all steel multi-use rock bit

Timken threaded carbide insert rock bit

your best bet for the best bit ... for every job

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.



MORE POWER TO YOU ...

with an assist from

RAYMOND

Raymond is proud of the services it has rendered in helping countries throughout the free world meet their needs for more power. Since 1955, for example, our Raymond Concrete Pile Division has driven over 2,700,000 feet of piles to support 123 new power plants in this country alone. In addition, we have completed a good many construction projects for inlet and discharge canals and other allied structures.

At the moment we are working on, or about to start, power plant projects for Gulf States Utilities, Northern States Power, Tampa Electric, Public Service Electric & Gas, Carolina Power & Light, and Missouri Public Service.

So, whether you are planning to build a new power plant or enlarge your current facilities at home or abroad, investigate the advantages of using Raymond's methods, materials and over 60 years' experience.

RAYMOND
CONCRETE PILE COMPANY
A Division of Raymond International Inc.

140 CEDAR STREET, NEW YORK 6, N. Y.

Branch Offices in Principal Cities of the United States.
Subsidiaries in Canada, Central and South America and other countries.

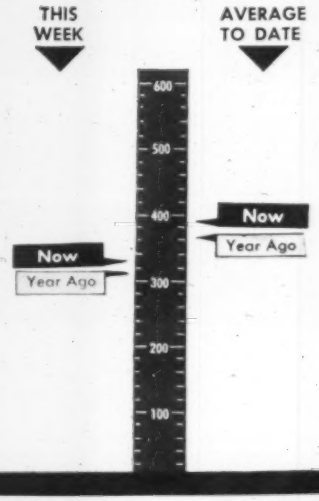
FOUNDATIONS FOR THE STRUCTURES OF AMERICA...

COMPLETE CONSTRUCTION SERVICES ABROAD.

Construction Scoreboard

ACTIVITY THIS WEEK

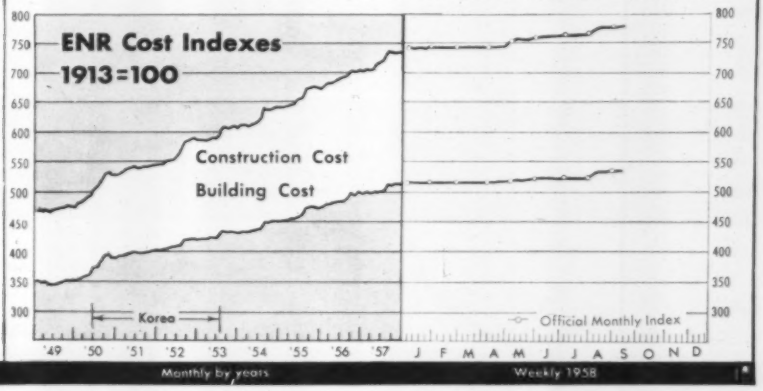
Contract Awards
Millions of Dollars



COST INDEXES AS OF NOW

ENR INDEXES (1913=100), 20-cities' average	Week of Sep. 11 1958	% Change from Aug. 14 1958	% Change from Sep. 12 1957
Construction Cost	774.67	+0.4	+5.0
Building Costs	536.08	+0.4	+3.8

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518



AMOUNT OF CONTRACTS LET

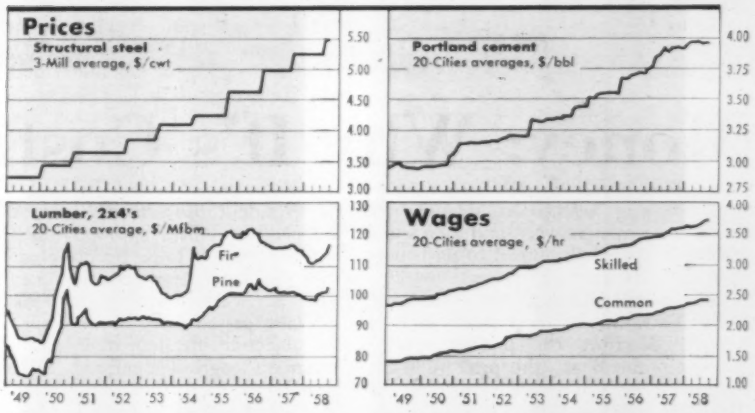
By Ownership	This Week	Cum. 38 wks 1958 millions	Chge '57-'58 %
All Heavy Constr.	$332.4	$14,709.1	+7
Private	109.1	6,000.7	−6
Public	223.3	8,708.4	+18
State & Municipal	201.1	6,356.0	+15
Federal	22.2	2,352.4	+26
By Type of Work			
Public			
Waterworks	5.7	233.5	−9
Sewerage	6.6	454.9	+13
Bridges*	7.3	522.5	−2
Highways	107.7	2,633.2	+14
Earthwork, Waterways	7.1	802.4	−5
Buildings, Excl. Housing	12.4	1,950.1	+16
Housing	49.1	980.8	+97
Unclassified	27.5	1,140.2	+32
Private			
Mass Housing	61.6	2,898.9	+31
Commercial	29.3	1,421.3	+9
Industrial	16.4	1,343.0	−45
Unclassified	1.7	328.3	−10

* Includes private bridges.

NOTE: Minimum size-projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

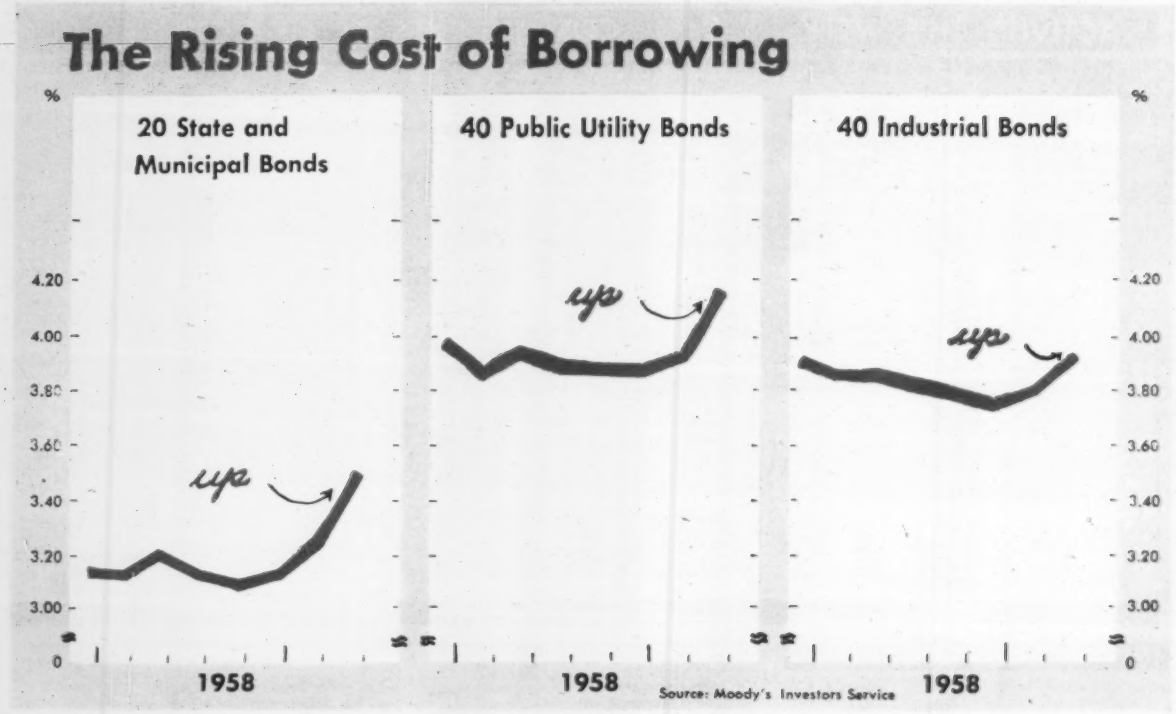
NEW CAPITAL FOR CONSTRUCTION

	Week of Sept. 11	Cum. 37 wks 1958 millions	Chge '57-'58 %
Corporate Securities	$114.7	$3,925.4	−5
State and Municipal:			
All Except Housing	58.5	4,562.2	+18
Housing	...	33.8	−78
Federal Loans	2.6	140.3	−16
Federal Aid	...	216.2	−90
Total Nonfederal	$175.8	$8,877.8	−15
Federal Appropriations:			
Projects in U. S.	...	$3,946.1	+42
Outside U. S.	...	12.8	−56
Total New Capital	$175.8	$12,836.7	−3



ENR COST INDEXES IN 22 CITIES, 1913 = 100

City	Construction Cost Sep. 1958	Construction Cost Percent Change from last Month	Construction Cost Percent Change from last Year	Building Cost Sep. 1958	Building Cost Percent Change from last Month	Building Cost Percent Change from last Year
Atlanta	584	+2.8	+6.2	472	+1.2	+3.2
Baltimore	708	+1.0	+5.7	534	+1.4	+3.1
Birmingham	599	+0.9	+6.5	488	+1.6	+4.2
Boston	809	+1.1	+4.6	547	+1.7	+3.1
Chicago	857	+1.4	+2.3	560	+2.4	+5.6
Cincinnati	780	+1.2	+3.9	519	+1.8	+2.4
Cleveland	874	+0.6	+1.5	527	+1.1	+0.1
Dallas	573	+1.0	+4.9	469	+1.2	+4.0
Denver	731	+0.8	+2.8	530	+1.1	+1.6
Detroit	889	+1.7	+6.9	573	+3.2	+5.1
Kansas City	768	+0.7	+3.5	533	+1.1	+3.3
Los Angeles	822	+0.7	+5.6	527	+2.1	+3.9
Minneapolis	825	+0.8	+4.6	554	+1.2	+3.1
New Orleans	602	+1.6	+3.7	485	+1.7	+1.7
New York	953	+1.5	+7.1	622	+2.3	+5.4
Philadelphia	803	+1.0	+3.5	581	+2.1	+3.4
Pittsburgh	827	+0.7	+4.6	593	+1.3	+4.8
St. Louis	849	+0.7	+6.5	567	+1.0	+3.9
San Francisco	820	+2.3	+7.4	533	+3.6	+7.1
Seattle	799	+1.3	+5.7	484	+2.1	+3.5
U. S.—20 Cities' average	773	+1.2	+4.8	535	+1.8	+3.6
Montreal	603	0	+2.6	449	0	−0.6
Toronto	616	+2.0	+1.3	469	0	+0.1



Money: Why It's Costing More

A looming federal deficit, inflation fears, economic recovery, and even speculation, have all combined to push borrowing costs upward.

The First National City Bank of New York, in its September report, bluntly describes the present money market problem as "the price of fiscal improvidence" in government and in Congress.

If any one factor must be singled out as the cause of a steady climb in interest rates since May, an accusing finger can be pointed at a spendthrift Congress.

• **The deficit and Congress**—More federal spending was Congress' answer to the recession. And the Administration also played a part. It, too, rushed in with spending proposals that were not all linked to a national defense effort. However, many of its money requests were more modest than those eventually approved by Congress. And during the closing days of Congress, the Administration voiced strong opposition to some measures it considered unsound or too extravagant. This brought the death of some major bills, among them the general housing measure that would have covered a wider field than the emergency act. Earlier, the President also vetoed a $6.5 billion independent offices appropriations bill. It was vetoed because he objected to a $589 million federal payment into the Civil Service pension fund. This bill was later passed again by Congress with the objectionable item removed.

Since Congress adjourned, President Eisenhower has vetoed some other bills in the interest of economy (see page 182). But when the dust had settled, the federal government was—and still is—faced with $79.2 billion in expenditures during the current fiscal year. Forecasts last week placed income at $67 billion. From that $12.2 billion difference between outgo and income, there is stemming a nightmare of financial problems. From that deficit will flow difficulties hitting at industry, state, local and federal governments and individuals.

• **Worst to come**—The heavy blows will fall shortly. The first light jabs already are being felt in the money market. Within the next four months the U.S. Treasury must raise $7-$8 billion to partially cover the $12 billion deficit and pay for the goods and services Congress ordered.

Meanwhile, well before the full extent of the impending deficit was apparent, the economy that had been sliding for a year showed evidence of halting its drop. Gross National Product, the nation's total value of goods and services produced, turned up. By the end of the first six months it had scored a climb.

• **Early impact**—At about the same time, the economy felt the impact of a $1.85 billion emergency housing measure passed by Congress and signed by the President in March. Backed by $1 billion provided the Federal National Mortgage Association (Fannie Mae) to buy VA and FHA new-house mortgages at face value up to $13,500 each, builders rushed in to grab a sure-fire, sure-money market. Before the flow of funds was shut off in August, more than $800 million was committed.

Also, in the second quarter, when interest rates on federal debt, municipal and state bonds, and corporate bonds were at their low, mortgages of all types became attractive. FHA mortgages carried a 5¼% rate and the ceiling on VA mortgage interest rates had been boosted to 4.75% by Congress. Conventional mortgages were pulling anywhere from 4.75% to 6% depending on the region. Funds therefore were directed to mortgages.

Interest Rates: the Up's and Down's

	20 State & Municipal Bonds		40 Public Utility Bonds		40 Industrial Bonds	
	1957	1958	1957	1958	1957	1958
Jan.	3.51%	3.17%	3.98%	3.99%	4.02%	3.91%
Feb.	3.29	3.15	3.97	3.87	3.94	3.86
March	3.36	3.23	3.95	3.95	3.90	3.86
April	3.35	3.16	3.94	3.90	3.89	3.83
May	3.48	3.12	3.98	3.89	3.96	3.80
June	3.65	3.15	4.06	3.88	4.14	3.77
July	3.65	3.25	4.19	3.94	4.19	3.81
Aug.	3.84	3.50	4.33	4.16	4.29	3.94
Sep.	3.89	*3.77	4.45	**4.42	4.31	**4.25
Oct.	3.74		4.48		4.32	
Nov.	3.67		4.49		4.34	
Dec.	3.33		4.29		4.11	

*As of Sept. 11
**As of Sept. 11

Source: Moody's Investors Service

• **Enter speculation**—In May, the Treasury decided to retire some old securities and offered to exchange the outstanding debt with new 2.625% bonds. The recession had slowed by then, but many investors and businessmen were not convinced the end of the economic decline was in sight.

Also, money was plentiful and demand for credit was still low. The interest rate on the new bonds to mature in 1965 looked good. Professional traders, investors and many financial amateurs rushed in. To satisfy demand $7.25 billion was issued in June by the Treasury. All were convinced the Federal Reserve would continue its easy money policy.

• **Upturn and new policy**—Before the end of June, economists, businessmen and the Federal Reserve Board had a change of heart. Business definitely was on the upgrade and more optimistic plans were being made by industry. So the Federal Reserve made no other moves to ease money. The bond values slipped below the issue price of $100.

Since then the economy has definitely awakened. The Administration and the Federal Reserve Board decided that inflation, not recession, was the enemy to be defeated.

The Federal Reserve then switched signals. After allowing its district banks to cut discount rates in stages from a high of 3½% last November to 1.75%, it authorized the San Francisco bank to raise its discount rate to 2%. (The discount rate is the amount charged member commercial banks borrowing from the system.) Since the first boost was permitted, nine more of the 12 banks have followed suit, including New York City. Last week only the Philadelphia and Boston banks had maintained the 1.75% rate.

With these changes in direction by the Reserve, the decline in the 2.625% Treasury issue of June turned into a rout. A bond redeemable in 1965 for $1,000 could be bought last week for $938 to $940. The drop dragged other federal government issues along.

Capping the boost in the discount rate last week by the New York Federal Reserve Bank was the action of Chase Manhattan Bank—the largest in New York City and second in the nation. It boosted its prime interest rate from 3½% to 4%. Other banks across the nation followed the lead. (The prime rate is the one charged a bank's biggest customers with the best credit ratings.) From the prime interest rate, all other loans are scaled upward. So all types of loans must be raised.

• **Municipals hit**—Outstanding state and municipal bonds kept company with the Treasury issues' declines. Price offers for local issues dropped and may drop further as new issues are brought to market with higher yields.

Then last week, the Commerce Department-Securities Exchange Commission issued a joint report on spending plans of industry. This shows a definite recovery. In the fourth quarter businessmen plan to increase spending over the current third quarter. And in the third quarter itself, capital investment is expected to top the second quarter (ENR Sept. 11, p. 166).

Although the over-all increase for the full year may be better than expected early this year, there are good chances that this recovery will feed on itself. The full year improvement, therefore, could well be greater than forecast.

• **Where it comes from**—Some of this investment in plant and equipment will have to be obtained from the capital market. This will add to the pressure of borrowing in that market by state and local governments, which is expected to be heavy in the months ahead. Individuals also will be drawing upon the lending market. More pressure, therefore, will be exerted. But when the Treasury walks in with its $7-$8 billion of credit requests it will put a tight squeeze on the lending market.

Obviously the government will have to pay more for its borrowings and all other borrowers will have to follow along. In a free market, prices find their own level whether it's for dollars, oranges or apples, particularly when demand exceeds the supply.

Delaying Action

Industrial building agency faces Maine court test

Maine's Industrial Building Authority, established by the state to stimulate industrial development, is stalled pending a court test of the law creating the body.

The agency is authorized to insure loans up to 90% of a building's value. Loan insurance is supplied only for new structures built by community development corporations (ENR Oct. 3, 1957, p. 102).

The delay came when bank lawyers refused to approve a loan guaranteed by the agency until legality of the amendment to the state's constitution that paved the way for legislation is determined.

Although loan guarantees are limited to non-profit local groups that erect buildings for lease to industry, lawyers wonder whether the community group could be interpreted as an industrial enterprise.

The loan that triggered the delay was being arranged by the Maine Savings Bank, Portland, for a local development corporation in Gorham.

• **"Friendly suit"**—To obtain a court decision, a friendly suit was arranged. Directors of the bank approved a $45,000 loan and then a depositor brought suit for a declaratory judgment. The action charges the loan is illegal because it exceeds 70% of the value of the proposed building—the limit that savings banks in Maine are permitted to loan on any single structure.

The state's high court, known as the Maine Law Court, will get the case sometime during its October term.

(B&F continued on page 182)

Deficit Spells Trouble for Construction

A hold-down on government spending for construction and other programs is in the works. The tip-off comes in the Administration's annual late-summer budget review.

It shows a federal budget deficit of $12.2 billion for the current fiscal year—a peace-time record.

Total government spending will run to $79.2 billion. This is $7.3 billion over last year's expenditures and $5.3 billion more than the spending estimate for fiscal 1959 made in January.

Revenues will come to only $67 billion—down $2.1 billion from fiscal 1958 and $7.4 billion less than was initially expected for the current year. So the government's objective is to cut total spending as much as possible below the $79.2 billion now shaping up.

The rise in spending was generated by several factors: the post-Sputnik surge in defense planning, accelerated federal outlays for housing, the start of a civilian space program, higher price support payments because of the year's record crop, increased aid for small business, and steep retroactive pay hikes for civil service workers.

• **Recession hurt**—The drop in receipts reflects the past year's business recession. Corporate tax receipts, individual income tax payments, and even excises were all far from initial expectations.

The Administration is now committed to reducing the deficit as rapidly as possible. Washington officials are hopeful that the budget can be balanced in fiscal 1961.

Much of the hope stems from the belief that the recession is over and a general economic recovery is under way. This would sharply boost federal revenues next year.

But the key to a future balanced budget lies in Washington's ability to trim expenditures in certain programs, such as public works construction. It also hopes to keep the rate of increase in defense spending down to less than $1 billion annually.

• **Firm attitude**—Already there are clear signs of the Administration's new determination to control spending. The Pentagon, for example, will not be allowed to spend the extra $950 million Congress appropriated for military production (the procurement and manufacture of military equipment and hardware). Neither will it be allowed to use the additional funds provided to maintain an active military force larger than the Administration wants.

Experts Eye Construction Funds for Fat

Function	Fiscal '58	Fiscal '59 Jan. Est.	Fiscal '59 Sept. Est.	Change Jan. to Sept.
		(000,000 Omitted)		
Military Construction	$1,900	$2,066	$2,102	$36
Natural Resources (Corps of Eng., Bur. of Reclamation)	1,500	1,500	1,700	200
General Services Admin. (Construction)	241	263	310	47
FNMA (Fannie Mae)	Minus 34	139	1,061	921
Other Housing	231	316	440	124

In addition, the President vetoed several bills voted by Congress and successfully opposed others approved by one of the houses that would have meant an additional total expenditure of $5.5 billion over the next few years.

Included were public works measures, the area redevelopment bill, and the community facilities bill.

The Bureau of the Budget's new report shows these construction factors:

• Spending on natural resources program will run $199 million over initial plans for the year. This results from an accelerated rate of construction of navigation, flood control, irrigation, multipurpose water resource projects, and other civil public works. Total expenditure for the year comes to $1.7 billion. Most of the stepped-up activity was aimed at increasing employment in distressed areas. New appropriations for these programs totaled $1.7 billion—$266 million over the initial appropriation requests. The extra funds are earmarked for continuing the accelerated rate of public works construction into 1959, for loans to local groups for small reclamation projects, and for starting over 65 public works construction projects not included in the Administration's budget recommendations.

Housing expenditures also are being boosted. The big factor is a $1 billion increase over initial plans of the Housing and Home Finance Agency. Most of the cost will result from mortgage purchases by the Federal National Mortgage Association (Fannie Mae) under the new special assistance program for low-cost houses. However, the bulk of the amount represents commitments to buy, and are not yet actual purchases. The amount of actual Treasury outlays for this program is not yet known.

The highway trust fund will show a deficit of $444 million this fiscal year. This will result primarily from the increased authorizations in the Highway Act of 1958. This means the Administration must soon decide whether to dip into Treasury funds to finance the program or boost the gasoline tax once more. In fiscal 1960, the trust fund deficit is expected to go to $900 million, according to the Budget Bureau.

Housing Starts Continue Climb

Housing starts in August chalked up another 1958 high. The Bureau of Labor Statistics reports public and private starts in that month totaled 119,000. This is a 7.2% jump over July 1958 and 19% above a year ago. In the first eight months, total starts amounted to 769,100 which is 8% greater than the same months last year. A 1.1 million year now appears assured.

Private housing starts in August topped July by 1% with a total of 108,800. This is 12.4% above one year ago. Private starts now are at an annual rate of 1,170,000, the highest since January 1956. August was the fifth month this year that private starts established an annual rate of 1 million or more.

Public housing starts in August totaled 10,200. To date, 50,500 public housing starts are reported, a 39% boost over 1957.

(*B&F continued on page 184*)

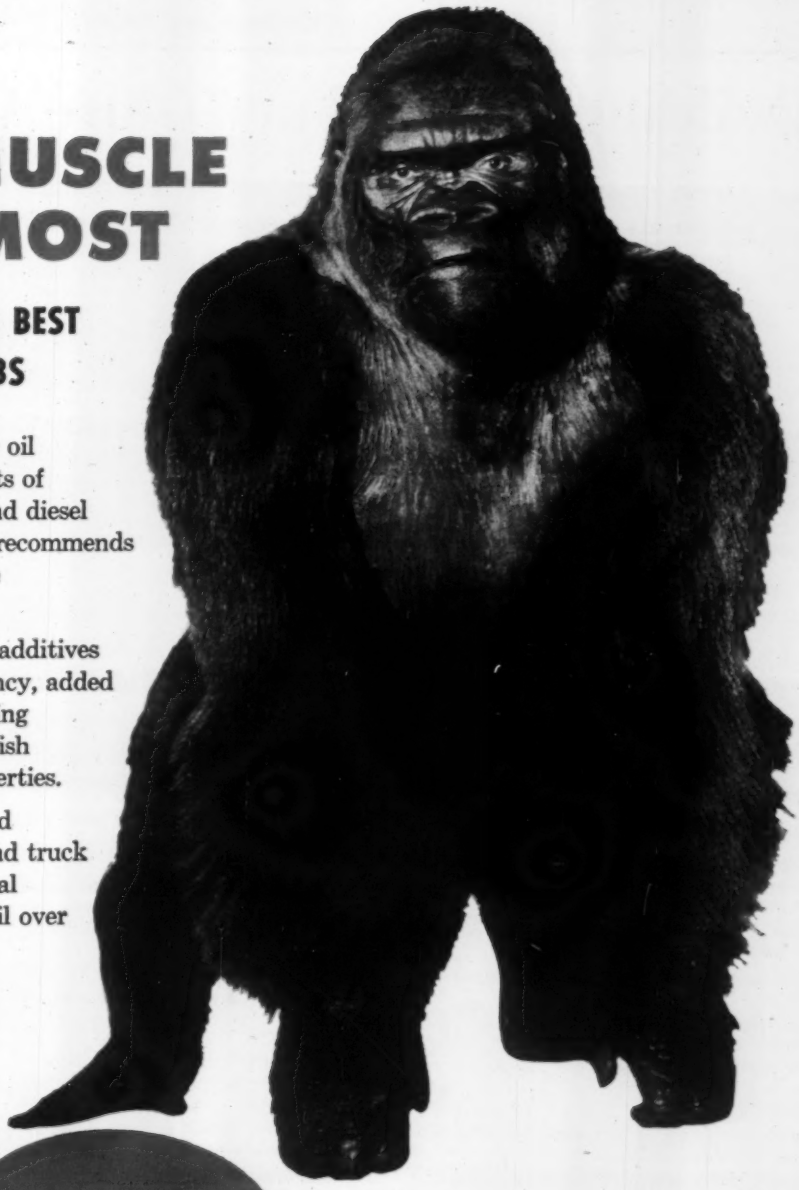
WHERE MUSCLE COUNTS MOST

AMOCO HDX OIL WORKS BEST FOR HEAVY-DUTY JOBS

Amoco HDX Oil is a heavy duty oil designed to meet the requirements of today's most exacting gasoline and diesel engines where the manufacturer recommends an oil conforming to API Service Designation "DG".

HDX insures clean engines. The additives used provide exceptional detergency, added stability, protection against bearing corrosion, high resistance to varnish formation and anti-foaming properties.

Satisfied customers including road contractors, coal strippers, bus and truck operators, attest to the exceptional record of this great heavy duty oil over many years of service.



AMOCO HDX OIL

When you want top performance, you want Amoco

AMERICAN OIL COMPANY, 555 Fifth Ave., New York, N. Y.

AMOCO ALSO PRESENTS...

Amoco Superior Diesel Oils, S-1, S-2 or S-3 — Permalube Gear Oils

Perma-Flo Oils — Permalube All-Purpose Grease No. 158

Vesuvius "X" Gear Compounds

Building Bonds Face More Opposition

Voters may reject a larger number of financing proposals this year; slight trend seen in New York

Bond proposals for state and municipal construction programs may encounter stiffer opposition in the November elections than they have in past years. Some storm warnings already have been raised.

In New York a new survey by the Education Department shows that 37% of all referendums for new school construction in the state was turned down during the 1957-58 school year. And in the final six months of 1957 alone, rejections amounted to 41% (ENR Aug. 14, p. 104).

The 1957-58 rejection rate compares to 24% in the 1956-57 school year and only 20% in the 1955-56 school year.

Opposition to more spending in the area of community improvements also is noted. In Garland, Tex., the voters rejected a $12.3 million bond issue to finance street construction, sewer installation and an increase in water supply capacity.

Omaha voters resoundingly defeated 13 bond issue proposals for $53.7 million. Each of the proposals was overturned by margins ranging from 2½ to 1, to 5 to 1. The funds would have paid for sewers, sewage treatment plant, roads, urban redevelopment, fire and police facilities, and airport improvement (ENR June 26, p. 80).

• **Taxation hurts**—The overwhelming opposition in Omaha was described as a "taxpayers' revolt." Observers are sure it wasn't for lack of information and education. The bonds would have paid for completion of most of the city's basic needs under the "Omaha plan." The plan had been developed and heavily publicized for three years by a committee of top businessmen, professional men and labor leaders.

But approval of the bonds would have called for a hike in real estate taxes and sewer-use fees. And there was much outspoken opposition to these increases.

The aversion to heavier tax burdens is also underlined by the action of Toledo voters. For the second time in three months the city's residents knocked down a proposed tax increase to help pay for an $89 million expressway construction program. In May, it was defeated by a margin of only 3,000. In July the same proposal was defeated by two to one.

• **Officials worried**—The referendum results in New York State are giving officials there some concern. They report that rejections indicate that the public is showing concern over high local taxes. However, some top school officials do not think the rejection situation is serious enough now to hurt schooling.

New York's report shows a sharp percentage drop from 1955 to 1958 in the dollar value of approvals received by the state's school districts. In 1955-56 voters were asked for $154.5 million. They approved $119 million, or 78% of the total requested.

In 1956-57, $215.5 million was asked, $149 million was supplied—69% of the total requested. And in 1957-58, districts asked for $237 million, but were granted $131 million. That is only 55% of the amount requested.

• **First half results**—During this year's first half, there were 131 school bond proposals put to voters in 101 districts in the state. Eighty-four were approved for a percentage of 64%, a slight increase over the 59% approval rate of the last six months of 1957.

The dollar amount of approvals of proposed issues, however, was only 51% in 1958's first half. In the last half of last year, 57% of the dollar value was approved.

The report also notes that 31 of the proposals were presented to voters as many as three times. Three other proposals were on the ballot five times. Of the 34 "repeaters," 16 obtained approval.

• **Big issues looming**—November will tell whether or not the rash of turn-downs is indicative of a full-blown trend. Seven states so far are on the record for $1.4 billion in state bonding proposals, of which $1.2 billion would pay for all types of construction. The states are: California, $780 million; Illinois, $323 million; New York, $100 million; Oregon, $77 million; New Jersey, $46 million; Rhode Island, $26.8 million; and Washington, $25 million.

The funds would go for urban redevelopment, public buildings, state institutions, schools, harbor development and housing loans.

On the basis of the total ticketed so far this year, the proposals will be well ahead of the total last November, when $778 million in construction bond issues was acted on. Of that total, 81% was approved. However, in 1956, 90% of the issues before the voters was approved.

Metals Firm Enters Engineering

Anaconda Co. has established its engineering department as a wholly-owned subsidiary. The new company is called Anaconda-Jurden Associates, Inc., of New York City. It will design, engineer and supervise construction of all types of major industrial plants. President and chief engineer is Wilbur Jurden, formerly chief engineer of the parent company. Herman Boschen is a vice president and assistant to the chief engineer.

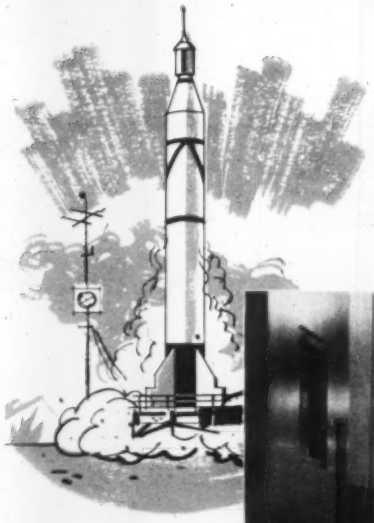
Mr. Jurden says the new organization will accept any type of job it "finds interesting to us." The staff is capable of taking on the design and construction supervision of power facilities, dams, commercial and public buildings.

The new firm is currently designing and supervising the construction of facilities costing $150 million. This includes the $110 million El Salvador sulfide copper plant for a Chilean concern and Anaconda's $40 million aluminum fabricating plant, Terre Haute, Ind.

"Working with outside concerns is not a new experience for us," Mr. Jurden says. "For many years we have had the experience of serving Phelps Dodge Copper Products Corporation in providing engineering services for several of its key installations."

Wilbur Jurden

(B&F continued on page 187)



7½ MILES OF SPACE ENCLOSURE

at Patrick Air Force Base . . .

A typical example of how J-M Transitop panels economically and attractively partition miles of interior space at Patrick Air Force Base.

—with Johns-Manville TRANSITOP® panels

While scientists experiment with shooting missiles into outer space, administrators at Patrick Air Force Base, Cocoa Beach, Florida, are faced with practical problems of enclosing space for earth-bound personnel.

Transitop panels furnished by Johns-Manville—seven-and-one-half miles of them—were used to provide headquarters space needs. These modern panels, used as interior walls, meet the many different requirements for administrative space enclosures.

Transitop, an insulating structural panel, consists of an impregnated core faced on two sides with incombustible Asbestos Flexboard® sheets. Transitop is available in panels 4′ wide by 8′ up to 12′ in length.

Engineered for durability, Transitop is ideal for use as the interior surface for structural walls or as free-standing ceiling height walls. It also provides every requirement for insulated curtain wall construction.

For the complete story on Transitop, write to: Johns-Manville, Box 158, New York 16, New York. In Canada write: 565 Lakeshore Road East, Port Credit, Ontario.

Send for brochure "J-M Asbestos Transitop"

36 pages with illustrated sections on Interior Wall Construction . . . Curtain Wall Construction . . . Roof Deck Construction . . . Steel Framing, Wood Framing, Moulding Systems . . . Design Data . . . Special Applications, etc. It's free for the asking.

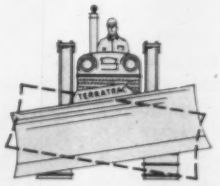
JOHNS-MANVILLE

JOHNS-MANVILLE JM PRODUCTS

Double your efficiency with a job-proved CASE® TERRATRAC® TILT-DOZER!

Hundreds of satisfied owners will tell you that the rugged 80 or 100 HP Case TerraTrac bulldozer — with exclusive power-tilting blade — will do *twice as much work, with 90% less operator effort* than any conventional dozer in its price range — BAR NONE. Here's why:

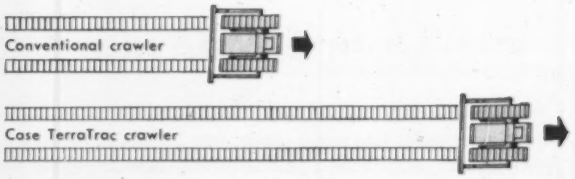
Blade tilts hydraulically "on-the-go"



You just flip two handy dash-mounted levers to drop either corner of blade up to 14" — right from the operator's seat. Saves time on ditching and road-crowning jobs. Enables you to rip up frozen ground, stumps, boulders, etc., no straight-blade dozer could handle.

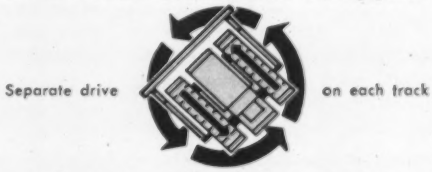
Twice the power — automatically applied

You'll move bigger loads, maintain better contact when pushing scrapers because *exclusive* torque-converter drive develops up to 12½ tons of push (Model 1000)... *adjusts* ground speed to changing loads smoothly, automatically, *without clutching*.



7 MPH reverse with instant power-shift

Up to twice as fast speed in reverse, cuts non-productive back-up time *in half*. In addition, the exclusive Terramatic transmission *eliminates up to 250 master clutchings per hour*... lets operator shift from high to low, forward to reverse, on-the-move, without clashing gears.



Turns sharper with full power control

Exclusive Case counter-rotating transmission completely eliminates "dead-track-turns"... drives one track *forward*, the other *reverse*, with simple hydraulic controls. No stiff steering levers to tug... no loss of power on turns... no complicated planetary gears to get out of kilter.

CASE 1st in quality for over 100 years

Clip ... Mail for more facts

J. I. CASE CO., Dept. J1418, Racine, Wis., U.S.A.

I'd like to know more about the 80 and 100 HP Case TerraTrac Tilt-Dozers.

☐ Send free illustrated catalog
☐ Send address of nearest dealer

Name .....Title .....

Company .....

Address .....

City .....State .....

CT-D-232

"Buy American" Issue Is Back Again

Foreign imports are an issue again in Utah's road construction program. The Salt Lake Chamber of Commerce and some members of the State Roads Commission want U.S. goods given preference for all future contracts.

A compromise on the issue was reached earlier this year. It was then decided not to adopt a "Buy American" policy until it was shown that domestic products were losing out widely to foreign-made goods. The compromise was advised by Ellis L. Armstrong, Utah's roads director, who becomes Commissioner of the U.S. Bureau of Public Roads October 1 (ENR Aug. 28, p. 59).

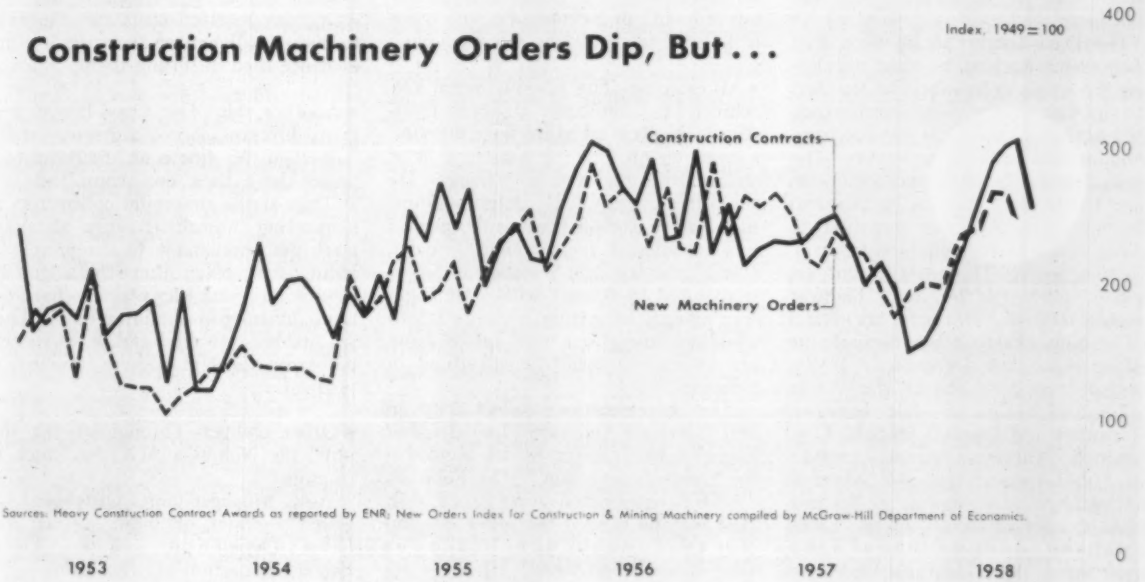
Gus P. Backman, executive secretary of the Chamber, explained the group's position: "We are fully aware of the fact that foreign steel and iron products are being dumped on the American market and in some instances probably can be purchased at a lower cost than American metals." Mining or steelmaking is carried on in Utah by U.S. Steel Corp., Kaiser Steel Corp. and Colorado Fuel & Iron Co. Utah, however, is not alone in its thinking.

• **Arkansas moves too**—Arkansas' Highway Commission imposed a ban on all foreign-made steel products used in state jobs as of September 1. The ban also applies to federal-aided work where the Bureau of Public Roads approves. BPR already has quashed a similar move in Texas (ENR July 31, p. 26). The Arkansas commission took action because a required inspection of materials at the plant is impossible with foreign-made materials, an official says. Only steel is prohibited.

• **Preferential treatment**—An ENR national survey indicates that nine states besides Utah and Arkansas give some form of preference to domestic materials. They are: North Dakota, Washington, Louisiana, Colorado, Maryland, California, Pennsylvania, Texas and Mississippi. (Thirty states responded to the survey.) Preference is provided by allowing higher prices on domestic goods, but the difference must not exceed the cost of foreign goods by a stipulated percentage. These overage allowances range from 2% to 5%.

Idaho has adopted a "Buy American" regulation, but it is only on a stand-by basis at this time.

Texas is continuing to give preference to domestic steel in the state highway program, about 10% of the total. A highway department official recalls only one recent complaint about foreign steel. A fabricator reported receiving steel covered with rust-scale from ocean moisture.



Sources: Heavy Construction Contract Awards as reported by ENR; New Orders Index for Construction & Mining Machinery compiled by McGraw-Hill Department of Economics.

July Volume Sets Record for Month

A seven-month streak of expanding heavy construction contract awards didn't bring much help to machinery manufacturers in July. New orders for July were 8% below June's volume.

The McGraw-Hill Department of Economics Orders Index shows new orders were at 250 in July, compared to the peak of 273 in June (based on 1949 = 100). However, orders set a new July record by topping the previous high in July, 1957, by 4%.

Interest now is focused on next month's orders report. New business for heavy construction contractors slipped in August to a Contract Awards Index value of 258 based on average monthly volume in 1949 as 100. This is a drop of 18% from the July peak. However, it is 12% higher than the volume reported in August, 1957.

The general improvement is reflected in sales reports of machinery makers. An ENR compilation of 16 firms shows sales up 23% to $919 million and net income up 74% to $40.6 million during the second quarter.

Prevailing Wages Spark a Feud

Investigation possible as Nebraska's troubles reflect some Davis-Bacon problems in nonunion areas

Highway department and contractor dissatisfaction with the way the federal prevailing wage requirements are working out in Nebraska may lead to a Congressional investigation of the U. S. Labor Department's administration of Davis-Bacon Act requirements.

Delays in federally assisted construction projects, such as highways, airports and hospitals, have been attributed to Labor Department red-tape and confusion. Contractors charge that "prevailing rates" and "union wages" are becoming synonymous and that high metropolitan or union wage rates are being applied to rural or nonunion areas. They claim the higher wage levels will spread eventually to all types of construction in Nebraska unless the trend is checked.

(The Davis-Bacon Act requires that construction workers be paid not less than the wages determined by the Secretary of Labor to be prevailing for such construction workers on similar construction work in the same locality. The act was passed in 1935 and applies to direct federal construction. Subsequent laws have extended the provision to various types of federally assisted construction work. The most recent extension covers the interstate highway program.)

The Nebraska feud has been in the making since last December. It has reached from Nebraska to the White House and embraced state highway, aeronautics and hospital officials, Gov. Victor E. Anderson, unions, contractors, Labor Secretary James P. Mitchell and members of Congress. It has produced charges of secrecy in the Labor Department, union influence of Labor Department determinations and contractor domination of the state highway department.

• **The problem**—State officials say the determination of prevailing wages is a big issue in conservative Nebraska because the state's labor force is largely nonunion. Outside of Omaha, few of the heavy, highway or building contractors are unionized.

These nonunion contractors make up the majority membership in the Associated General Contractors' state chapter. They fear that the present administration of the Davis-Bacon Act will force high Omaha union wages over the state as construction of the interstate highway system moves west from Omaha to Wyoming.

The Nebraska critics of the U. S. Labor Department make these three basic complaints:

1. The issuance of determinations is slow and unsatisfactory.

2. Determinations outside of Omaha are not prevailing rates.

3. They are denied access to the documentary evidence on which the determinations are based, in questioning the rates.

When the feud was carried to Washington, Labor Secretary Mitchell said it seemed to him that things had "gotten out of hand" in Nebraska because of "a little hysteria created by a few people."

• **An example**—The flareup started December 14, when State Highway Engineer L. N. Ress asked for wage determinations on 60 jobs for construction of an interstate highway interchange. He submitted proposed determinations based on rural rates because the project was outside of metropolitan Omaha. (Under the law, the Secretary of Labor is required to consult with state highway officials in setting highway rates.) Final determinations were due by January 14 so bids could be advertised in February.

The determinations didn't come in and Governor Anderson phoned Labor Department Solicitor Stuart Rothman for "immediate action." On February 14, 20 determinations were issued. Mr. Ress said he needed the other 40; and that the 20 issued were 33% higher than those he proposed. He asked for the documentary evidence on which the determinations were based.

Weeks of wrangling followed. The project was deleted from the February 27 letting. On March 25 a new list of wage determinations covering 41 jobs was issued. Mr. Ress said these were incomplete and still 33% higher than his recommendations. The determinations were not revised. The project was finally offered for bids in June.

Low bidder was an Omaha contractor who has working agreements with the unions to pay "metropolitan Omaha wage rates" in "rural Douglas County" where the job is located. (This practice is apparently one of the Nebraska problems.)

During the feud, the state AGC's Heavy-Highway Division, a number of local Chambers of Commerce and the Nebraska Young Republicans supported the highway engineer.

The AGC tried through Sen. Carl T. Curtis (R., Neb.) to get the documentary evidence used by the Labor Department. Investigators with the Senate Public Works Committee and the House Government Information Subcommittee were drawn into the dispute. Meetings were held at the Labor Department and in the White House.

Although Secretary Mitchell has assured Nebraskans that the Labor Department does not intend to spread Omaha wage rates across rural Nebraska, neither state officials nor the AGC have received satisfactory answers to their challenge of the rates or the evidence used in setting them.

• **Another side**—The Davis-Bacon program, however, is not a one-way street and when the shoe is on the other foot unions have their own complaints.

They accuse nonunion contractors of submitting unrealistic wage data on work not comparable to the project at hand. And when they challenge the rates determined they claim to have the same difficulty in obtaining relief. They say its hard to find out how specific determinations are made or how they're justified.

• **Other charges**—Throughout the dispute, the Nebraska AGC has stuck to its guns.

AGC Manager James Critchfield has issued a series of blasts against the Labor Department, charging Davis-Bacon obstruction in other fields.

He said the directors of the State Aeronautics and Hospital Departments "for years have had difficulty getting the Labor Department to approve minimum wages for construction of airport and hospital projects." He charged that the department delayed approving wage rates for these projects and that this in turn caused a delay in advertising the bids.

And in two airport improvement cases, he said, bids had to be advertised without any approved rates.

Last month, Rep. James Roosevelt

(D., Calif.) jumped into the dispute to answer some of Mr. Critchfield's charges in the Congressional Record. He said:

"The delay in letting the contracts for the interchange in June was due not to the failure of the United States Labor Department to issue a wage predetermination but rather due to the dissatisfaction expressed by you (Mr. Critchfield) and others with the wage rates predetermined by the Solicitor of Labor." Mr. Critchfield replied that Mr. Roosevelt was "misinformed."

In an effort to keep the situation under control, Governor Anderson has told his state department heads "that if they have problems with the Labor Department that they should bring them directly to my office."

The Builder Loses

City can't discriminate in favor of labor unions

Putting union and nonunion workers on the same construction job often is ticklish business, but on a public works job it can't be helped if that's the way the bids fall.

The issue has just been litigated in Delaware. And the Federal District Court says a municipal contracting agency must award its bids without discriminating in favor of organized labor. If labor strife results, the agency isn't liable for damages.

The suit was brought against the Wilmington Housing Authority by Anthony P. Miller, Inc., general contractor on a public housing project. Although Miller was using union workers, the authority awarded the demolition, site work and utilities contract to a nonunion contractor (James Julian) who submitted the low bid.

Miller claimed the presence of the nonunion workers brought on a 54-day strike that cost it $261,797. It contended the strike resulted from the authority's failure to coordinate the work of the general contractors and sued the authority for breach of contract. It claimed as damages what it said the strike had cost. The claim was dismissed.

"The sole reason for plaintiff's objection to the awarding of the other prime contract to Julian was that he is a nonunion employer," the court said. "A refusal by the defendant to award the contract to him for this reason alone would clearly violate the public policy."

The court concluded that a municipal corporation cannot discriminate in favor of organized labor.

Painters Settle Antitrust Strike

A Chicago building trades union has signed a consent decree with the U. S. Justice Department. It winds up an antitrust suit that charged the union with unlawful interference with use of pre-glazed sash, windows, doors and other pre-glazed products.

The anti-trusters' suit filed last year accused Local 27 of the painters union of conspiring with Hamilton Glass Co. and other area glazing contractors to force builders and general contractors to stop using pre-glazed sash and to do glazing work on the job site. Local 27 last week accepted settlement terms that forbid union-employer conspiracies to limit use of pre-glazed products. At the same time, the government dropped Hamilton Glass from the case.

Under the consent decree, pre-glazed sash is defined as those products glazed by members of the Brotherhood of Painters in factories or at any place other than a construction site.

The far-reaching significance of the decree is that the union is prohibited from restricting the manufacture or use of pre-glazed products; from requiring reglazing where not needed; from demanding payment for glazing work not performed; and from forcing any person to stop work on a job solely because pre-glazed products are being installed.

The terms also bar any union-employer conspiracy to prevent installation of pre-glazed products that have been glazed by members of any union not affiliated with the painters union.

Antitrust Chief Victor Hansen says the consent decree "recognizes legitimate activities of the labor union" but blocks union-employer combinations "outside the antitrust immunity" the law gives labor.

Employment: Behind, but Growing

The construction industry, showing steady but only seasonal gains since spring, is leading the non-manufacturing segment of the nation's economy in employment.

New figures from the Labor and Commerce Departments for August put 2,942,000 employees on construction jobs. That's a gain of 54,000 over July's 2,888,000 and it's 257,000 more than the industry had at work in May (2,685,000) when the sharp seasonal upturn began.

But like most private industry, construction still is far under its 1957 employment levels. A year ago in August, 3,057,000 were busy in construction—or 115,000 more than last month. Only food-liquor retailers (up 26,200) and finance, insurance and real estate (up 16,000) showed gains over August 1957.

In all, total civilian employment was 65.4 million for August, the 1958 peak thus far. Non-agricultural employment also hit its high for the year—58.7 million.

The government's official reports do not provide insight into unemployment by industry groups but, over-all, the report for last month shows unemployment still relatively high—at 4.7 million. That represents 500,000 fewer unemployed than in July. But government officials do not attempt to make that fact appear overly important although it was the first time since January that the total jobless numbered less than 5 million.

The decline in unemployment, Secretaries Mitchell of Labor and Weeks of Commerce agree in a joint statement, occurred mainly among young workers, including students, who could not obtain jobs and soon withdrew from the labor market. "There was no significant change over the month in the number of unemployed adult workers," they said.

Long and Costly Strike Ends in British Columbia

Work was expected to resume last week on some $52 million worth of construction projects in British Columbia after the longest and costliest strike in its construction history.

The return to work was assured after the Master Plumbers Association agreed to demands of the plumbers and pipefitters union for a 20 cent hourly wage increase plus 6 cents an hour in fringe benefits. This puts the current wage scale at $2.90. The new contract, which expires next March, does not call for a retroactive pay boost.

Some 2,000 lower mainland plumbers were locked out April 30 as a defensive move against threatened strike action. Later, the stalemate became a strike-lockout. A host of other trades was affected and the total wages lost are estimated at $5 million.

The dispute was one of several that hit British Columbia this year as contractors tried to hold the line against high wage demands.

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.40 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

Bids: October 2, 1958

Soil Explorations and Foundations Investigation

NOTICE TO CONTRACTORS
STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 a.m. Advanced Eastern Standard Time on October 2, 1958, by Henry A. Cohen, Director, Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON BRUCKNER EXPRESSWAY SECTION 2, F. A. I. ROUTE 511 AND 516, CASTLE HILL AVENUE TO NEW ENGLAND THRUWAY, PROJECT 1-1068 (15), BRONX COUNTY, WHICH CONSTITUTES CONTRACT SPEC. NO. FA-SM-130.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, N. Y.
(b) Mr. M. E. Goui, District Engineer, New York State Department of Public Works, 325 West Main Street, Babylon, Long Island, New York.
(c) Mr. William M. Trainer, Associate Contract Engineer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bid; refund for all other sets in good condition, similar period, will be 50 percent of deposit.

The Engineer's Estimate of cost for this work is $49,737.50.

Proposal for this contract must be submitted in separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $2,500.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPERINTENDENT OF PUBLIC WORKS

Bids: October 6, 1958

Police & Fire Headquarters Building and Central Heating Plant (B10-228-58)

Sealed proposals for Building, Mechanical, Electrical Work and Jail Equipment for the Police & Fire Headquarters Building and Central Heating Plant, Dearborn Civic Center, Dearborn, Michigan, will be received by the City of Dearborn, Michigan, at the Office of the City Clerk in the Municipal Building, Michigan Avenue and Schaefer Road, until 2:00 P.M., October 6, 1958, and will immediately thereafter be publicly opened and read aloud.

Separate bids will be received for Building, Mechanical, Electrical Work and Jail Equipment.

The contract documents are on file and may be examined at the Office of the Architects and Engineers during business hours. Copies of the documents may be obtained by depositing at the Architects and Engineers' Office cash or check in the amount of $40.00, which will be refunded if the complete documents are returned in good condition within 10 days after the opening of bids.

Proposals must be submitted in the form provided therefor by the Architects and Engineers. A certified check or cashier's check (BID BONDS WILL NOT BE ACCEPTABLE) payable to the City of Dearborn, Michigan, in an amount not less than 5% of the bid, shall be submitted with each Proposal, subject to the conditions set forth in the Instructions to Bidders.

The accepted bidder will be required to execute performance and lien bonds, each for the full amount of the contract.

No Proposal may be withdrawn for at least 60 days after the scheduled closing time for receipt of proposals.

The City of Dearborn reserves the right to waive any informality in any bid, or to reject any or all bids, in whole or in part, should it be deemed for its best interests to do so.

CITY OF DEARBORN, MICHIGAN
JOSEPH CARDINAL
City Clerk

HARLEY, ELLINGTON & DAY, INC.
Architects and Engineers
153 E. Elizabeth St.
Detroit 1, Michigan

Bids: December 15, 1958

Republic of Iraq Development Board and Ministry of Development Basra Fertilizer Project

The Development Board and Ministry of Development of the Republic of Iraq invites qualified firms to tender for the engineering, supply, erection and commissioning of a plant for the production of 250,000 tons of Ammonium Sulfate and 21,000 tons of Sulphuric Acid Annually.

Full information regarding this tender can be obtained on and after 15 September 1958 from Embassy of Iraq, Washington.

All tender documents are to be submitted in English to the Ministry of Development, D.G. Legal Affairs and Contracts on or before 12 noon, local time, on 15 December 1958.

Minister of Development

R.R. 13/8/58

Bids: January 3, 1959

Republic of Iraq Development Board and Ministry of Development, Baghdad Paper Plant Project

The Development Board and Ministry of Development of the Republic of Iraq invite tenders from qualified firms for the supply, delivery and erection of a complete plant to produce Pulp, Paper and Cardboard from reeds.

Full information regarding this tender can be obtained on and after Sept. 3rd, from the Ministry of Development, Baghdad, Iraq, from the nearest Iraqi diplomatic Representative and from the Office of the Consulting Engineers, C.E.I.C., 66 Ave. Kléber, Paris, France.

All tender documents are to be submitted in English to the Ministry of Development, D.G. Legal Affairs and Contracts on or before 12 noon, local time, on January 3rd 1959.

Minister of Development.

TS/ 6th Aug., '58

Bids: October 21, 1958

Contract EXD-230.001

THE PORT OF NEW YORK AUTHORITY
PORT AUTHORITY BUILDING
FOURTEENTH FLOOR ALTERATIONS

Sealed proposals for performing alterations to the fourteenth floor of the Port Authority Building at 111 Eighth Avenue, New York 11, N. Y. will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, October 21, 1958, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1061, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, September 18, 1958

U. S. Government

Department of Commerce, Civil Aeronautics Administration. Sealed bids (Invitation No. 9-315SH) will be received at Washington, D. C., until 2:00 P.M., Wednesday, September 24, 1958, for grading and drainage work in connection with the development of the Washington International Airport in Fairfax and Loudoun Counties, Virginia, involving an area of approximately 3,000 acres, including excavation and embankment, maintenance of existing roads, sewers, culverts and drainage structures and other related work. For particulars address Procurement Division, W-160, Civil Aeronautics Administration, T-5 Building, Room 2615, Washington 25, D. C. A $25.00 deposit per set must accompany requests for plans and specifications.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-5109), will be received at Denver, Colorado, until October 16, 1958, for furnishing motor-driven, horizontal, centrifugal-type pumping units as follows: Three (3) units each having a capacity of 37 cubic feet per second at 275 foot head; and two (2) units each having a capacity of 17.5 cubic feet per second at 119 foot head for Radar Pumping Plant, Columbia Basin Project, Washington. Delivery is desired within 330 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSAL

RATE: $2.40 per line (or fraction) per insertion.

CLOSING DATE: 10:30 a.m. Friday for issue out following Thursday.

SEND COPY: Official Proposal Division, Engineering News-Record, Class. Adv. Div., P.O. Box 12, New York 36, N. Y.

OFFICIAL PROPOSALS

Bids: October 14, 1958

Commonwealth of Puerto Rico
Department of Public Works
Bureau of Highways

PROJECT F-2-4 (5) "DE HOSTOS" AVENUE
(MAYAGUEZ TERRACE—CRISTY STREET SECTION)
MUNICIPALITY OF MAYAGUEZ, P. R.
ADVERTISEMENT
August 25, 1958

The Board of Awards of the Department of Public Works of Puerto Rico, 1507 Ponce de León Avenue, Santurce, Puerto Rico, will receive sealed proposals for the construction of 2.506 Kms. of Project F-2-4 (5) "DE HOSTOS" AVENUE (Mayaguez Terrace-Cristy Street Section), State Road No. 2 Municipality of Mayaguez, Puerto Rico.

OFFICIAL PROPOSALS

Bidders shall submit their proposals at the office of the Board of Awards, 1507 Ponce de León Avenue, Santurce, Puerto Rico until 2:00 P.M. (Puerto Rico time) October 14, 1958 at which time and place said proposals will be publicly opened and read aloud.

Principal items are 110,265 CuM Selected Borrow Material; 100,100 LnFt Vertical Sand Drains; 3,153 CuM Class "A" Concrete; 30,635 LnFt Cast-in-place Concrete Piles or 28,188 LnFt Structural Steel Piles and 109 Each 100 Feet Precast Post-tensioned Bridge Girders.

Plans, specifications, instructions to bidders, and all necessary information may be obtained from the office of the Procurement and Contract Division, Department of Public Works, 1507 Ponce de León Avenue, Santurce, Puerto Rico upon a deposit of ONE HUNDRED TWENTY FIVE DOLLARS ($125.00) in cash, money order or

OFFICIAL PROPOSALS

certified check payable to the Secretary of the Treasury of Puerto Rico until 96 hours prior to the opening of bids. The full amount of the deposit will be refunded to each depositor upon the return of the plans in good condition within (20) days after the opening of bids.

Each proposal must be accompanied by a provisional bond in the amount of NINETY THOUSAND DOLLARS ($90,000.00) in any of the terms indicated in the General Conditions.

The Board of Awards reserves the right to accept or reject any or all bids and to award contract under the conditions found most favorable to the Commonwealth of Puerto Rico.

Sgd.
Francisco Lizardi
Acting Secretary of
Public Works

EMPLOYMENT NATIONAL COVERAGE OPPORTUNITIES

DISPLAYED RATE:

The advertising rate is $39.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

OCTOBER 2nd ISSUE CLOSES SEPT. 22nd

UNDISPLAYED RATE:

$2.40 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take ½ of above rate.

Box numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to Agency Commission.

Send NEW Ads and Inquiries to Classified Advertising Division of ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36.

ADDRESS BOX NO. REPLIES TO: Box No.
Classified Adv. Div. of this publication.
Send to office nearest you.
NEW YORK 36: P. O. BOX 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

• POSITIONS VACANT

Highway Engineers—Highway Engineers with a minimum of 3 years experience. Excellent opportunity with established consulting engineering firm in Middle West. P-7909, Engineering News-Record.

Engineer-Management. Associate with legal and/or accounting training—development and construction of oil company terminal projects—New York and East Coast areas. P-8716, Engineering News-Record.

Wanted: Top Flight Salesman-Estimator for aggressive, growing steel fabricator. Must know structural steel and construction business. Opportunity for ambitious man to grow with company. Location Michigan. P-8769, Engineering News-Record.

Wanted: General Building Construction Estimator, experienced in concrete, masonry and building trades. Position with expanding established general contractor in New York-Westchester area. P-8768, Engineering News-Record.

Civil or Arch. Engineering Graduates under 30, aggressive, military completed. For estimating and field engineering. Some background experience desirable. Submit personal resume and recent photograph. Dondlinger & Sons Const. Co., Inc., Box 398, Wichita, Kansas.

Resident Engineer, experienced, registered, on small sewage treatment project, (about $250,000), salary range $500 to $600 per month depending on qualifications, plus reasonable expense allowance. Complete resume of experience and education and statement of salary requirement in letter of application. Location Ohio. P-8785, Engineering News-Record.

Graduate engineers experienced in soils and building materials testing. Thompson & Lichtner Co., 8 Alton Place, Brookline 46, Mass.

Superintendent Wanted for road construction. Rieth-Riley Construction Co., Inc., P.O. Box 477, Goshen, Indiana.

• POSITIONS VACANT

Bridge Designers with Interstate experience. Forward complete resume of education and experience with salary requirements to Macomber & Faber, 1824 N. 4th St., Harrisburg, Pa.

Associate Civil Engineers San Francisco Bay Area—$625-$780. Design positions in street and port departments. Promotional opportunities, liberal benefits. B.S. in civil and 3 years experience. Contact Mr. Weaver, Civil Service, Room 100, City Hall, Oakland, California.

Civil Engineer with extensive experience in the design and construction of large capacity water supply projects including pumping stations and intake structures. Send complete resume including salary requirements. P-8804, Engineering News-Record.

Reinforcing Detailer with a minimum of five years experience. Excellent starting salary and usual benefits. Opportunity for advancement. Brocker Mfg. & Supply Co., York, Pennsylvania.

Qualified Reinforcing Steel Estimator required for growing Fabricator. Excellent salary for right man. Brocker Mfg. & Supply Co., York, Pennsylvania.

Aggressive Civil Engineer—Age 24 to 30— General Construction estimator with some construction experience—Industrial, commercial, institutional—Opportunities and benefits—Location South East Ohio—Send resume. P-8834, Engineering News-Record.

Wanted Architectural Draftsman with 2 or more years experience. Excellent opportunity with established consulting engineering firm in middle west. State education, background and experience. Reply to P-8590, Engineering News-Record.

Wanted Registered Architect with 4 or more years experience. Excellent opportunity with established consulting engineering firm in middle west. State education, background and experience. Reply to P-8615, Engineering News-Record.

Experienced estimator with background in concrete structures, grouting, foundations and concrete design. Outstanding opportunity with nationwide contractor for aggressive, alert engineer. P-8623, Engineering News-Record.

Cost Estimator—With Heavy Construction Experience. Firm is established but growing. Upstate New York—Municipal Contractor. Desire young ambitious engineer. Salary and future dependent on ability. Furnish resume and references. P-8867, Engineering News-Record.

• POSITIONS VACANT

A well-established firm of consulting engineers with some practice in the Highway Field is looking for a man of mature years capable of giving a final check to completed road and bridge plans for the Interstate System, who has had experience in obtaining approvals for road plans and bridge plans from State Highway Departments and the Bureau of Public Roads. Applicants may write to us in confidence, setting forth in detail their experience and training in the Highway Field. This is a permanent position for a superior individual. P-8871, Engineering News-Record.

Engineer, civil or draftsman first class only, experienced—field layout work—also engineer's guild in calculations, computations, quantity take-offs, drafting, on large construction projects. PO Box 402, Barre, Vermont.

Earthmoving Engineering—Major manufacturer of heavy earthmoving equipment has immediate opportunity opening at Southwest factory for progressive earthmoving engineer. Position requires a quick, clear thinker with broad expreience in earthmoving. Must be responsive and adaptable to new types of equipment and methods. Age preference 30-40. Background should include contracting, supervision and engineering on large job scale. Location: Northeast Texas, community population 50,000. Salary open. Liberal fringe benefit program. Send complete resume including experience, education and salary requirement in first letter. All replies treated in strict confidence. R. G. LeTourneau, Inc., General Offices, Department 16-F Eng., Longview, Texas.

General Superintendent. Contractor with substantial volume in sewer construction in Missouri and Illinois has immediate opening for experienced man to assume full charge of field operations of $200,000-$300,000 jobs. Engineering degree preferred but not required. Salary open. Crow Contracting Corp., 1441 N. Warson Rd., St. Louis 14, Mo.

Water Treatment Engineer Must have had experience in the design of filtration plants, water softening, and iron removal. Registration desirous but not necessary. Consulting Engineering firm in the Midwest. State education, background and experience. P-8887, Engineering News-Record.

• POSITIONS WANTED

BSCE-MIT, PhD Rome Italy, US citizen, experience on both sides Atlantic. Would like to remain in Europe. Write Engineer, Vle XXI Aprile 34, Rome, Italy.

(Continued on following page)

ENGINEERS

PERMANENT OPENINGS FOR QUALIFIED MEN EXPERIENCED IN THE DESIGN OR SPECIFICATIONS FOR

AIRPORTS
BRIDGES
BUILDINGS
HIGHWAYS
RAILROADS

PREFER GRADUATE REGISTERED ENGINEERS WHO SEEK LONG RANGE EMPLOYMENT WITH AMPLE OPPORTUNITY FOR PROFESSIONAL DEVELOPMENT AND ADVANCEMENT IN A STEADILY EXPANDING AND GROWING ORGANIZATION.

Paid vacation, sick leave, holiday, overtime. Excellent Employee Benefits Plan provides retirement income plus life and disability insurance. Blue Cross. Moving allowance.

Work will be in the general offices in St. Louis. Interviews can be arranged in Washington, D. C., and San Francisco also.

Please write fully, including salary data, to

SVERDRUP & PARCEL, Inc.
ENGINEERS — ARCHITECTS
915 Olive St. Louis 1, Mo.

CIVIL ENGINEERS
HIGHWAY DESIGNERS
STRUCTURAL DESIGNERS
DRAINAGE DESIGNERS
FOR HIGHWAY and BRIDGE WORK
SENIOR and JUNIORS
WORK IN RICHMOND, VA.
Send Resumes to
Blackburn & Blauvelt
3114 West Clay Street Richmond, Va.

STRUCTURAL ENGINEER

Structural steel designer and estimator for industrial buildings and miscellaneous steel structures. Applicant should be graduate engineer, preferably 30-40 years old, with minimum of 5 years actual structural steel design experience. Permanent employment, paid vacations, group insurance plan, pension plan. Excellent opportunity. Location Mid-West. Employer is nationally known, well established steel fabricator.

Reply fully, giving resume of experience, education, age and salary requirements to

P-8715, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

ENGINEERING DESIGN PERSONNEL

For Work On Highway, Bridge, Water and Sewerage Projects
Openings in Pennsylvania, Ohio & West Virginia

Career opportunities for individuals interested in professional recognition, ample opportunity for advancement based on merit, plus employee retirement plan, group life insurance, hospitalization, paid vacation and holidays.

Mail Resume To F. W. AHERN, Personnel Director

MICHAEL BAKER, JR., INC.
Consulting Engineers
Baker Building Phone SPruce 4-3010 Rochester, Penna.

RESIDENT PROJECT ENGINEER
HYDRO PLANT

Overseas position for Civil Engineer, age 45 to 65, familiar with dam design requirements and with minimum ten years' experience in responsible charge of substantial concrete hydro-electric plant construction. Acting as Resident Project Engineer for Consulting Engineer, will review construction planning and operations to assure adequacy and economy of construction; and will review activities of Owner's inspection staff to assure construction of project in accordance with design, plans and specifications. Initial assignment 22 months with possibility of 36 months' service. Good salary and living conditions, quarters and travel allowance.

The J. G. White Engineering Corporation
80 Broad Street, New York 4

CHIEF HIGHWAY ENGINEER

Broad experience required in design, construction and administrative phases. Ability to manage large highway department, in addition to client negotiations and liaison, is paramount.

Frank L. Ehasz
Consulting Engineer
40-29 27th St. L. I. C. 1, N. Y.

• *POSITIONS WANTED*
(Continued from preceding page)

Cost Engineer, graduate civil age 30. 8 years experience cost engineering-scheduling—progress. Largest industrial & heavy construction projects. AEC "Q" clearance. PW-8818, Engineering News-Record.

Civil Engineer—MSCE in hydraulics and fluid mechanics. Junior Member ASCE. Veteran. Permanent employment desired. PW-8824, Engineering News-Record.

General Manager—Medium size building construction firm. Seeks position leading to participation in ownership. Successful record. Graduate engineer. Middle thirties. PW-8704, Engineering News-Record.

Prestressed and Precast Concrete-Executive, now in Prestressed, with broad experience in top positions in General Contracting, who can plan, build, organize and operate Prestressed Plant, solicits inquiries from those requiring top man to handle large operation. Minimum Salary $20,000. PW-8618, Engineering News-Record.

Qualified Piping Supt. Complete construction. Chemical, Power plants, Oil Refineries, Etc. R. Lee, 1112 North Cherbourne Dr., Hollywood 46, California.

Construction Engineer, BCE, Registered N. Y., Married. Age 37. Wants employment with General Contractor field or office. 11 years experience heavy construction oil refinery, chemical and power plants. Presently employed, available in about 10 weeks. For detailed resume write PW-8865, Engineering News-Record.

Former Contractor and heavy construction equipment superintendent, 20 years experience in Europe, South America and domestic desires superintendent's position on earth-moving project in Central or S.A. Now employed in S.A. PW-8860, Engineering News-Record.

Civil Engineer, Registered, Member A.S.C.E., 25 years experience in Highway and Expressway Design, 10 years in responsible positions, interested in making permanent connection with consulting firm. Salary and location open. PW-8857, Engineering News-Record.

HORIZONTAL SHORING

Leading manufacturer of telescopic-Horizontal shoring BEAM for all types of poured concrete slabs and other specialties for concrete construction is looking for distributors, manufacturers representatives and salesmen specializing in construction industry.

Territories open in many key marketing areas.

RW-8841, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

• *POSITIONS WANTED*

Const. Supt.; 20 years institutional, industrial, Commercial, Engineer. Anywhere. PW-8829, Engineering News-Record.

Struct. P.E. 30. 5 yrs. bldg. design exp. now employed. Seeks position with consultant or general contractor. PW-8855, Engineering News-Record.

Position Wanted: Location—Prefer Overseas. Age 28. Education—B.S. degree. Type of work—reinf. conc. or bridges. Background—employer, supervision & estimator. Mailing address—P.O. Box 28, New Hudson, Mich.

Contractors Project Engineers—Resident Engineer, Heavy Foundations, Roads, Bridges, Airfields. After Sept. 16th Domestic—Foreign. P.O. Box 2354, Grand Central Station, New York.

Graduate Mining Engineer, 33, single, Canadian, 9 years varied mining experience in surveying, layouts, and contract administration—Interested in municipal work, construction, manufacturing, or sales—will travel or relocate in Canada or U.S.—Available one month's notice. PW-8862, Engineering News-Record.

BSCE-MSCE struct; PE; 32. 4 yrs. Struct. H&V, & Air Cond. design & super. in commercial & ind. const. Desire responsible position with small Arch or A-E office. Midwest, South, West NY & Pa. N. New Eng. PW-8884, Engineering News-Record.

Concrete Engineer—over 20 yrs. exp. on major projects domestic and foreign, seeks foreign assignment. Resume on request. PW-8891, Engineering News-Record.

Construction accounting-public relations executive, fluent Spanish, presently engaged highway program Latin America country desires financial-accounting managership Latin America Heavy construction. PW-8879, Engineering News-Record.

Chief Estimator-General Manager. Over 20 years experience Vice-President and General Manager. Extensive experience competitive bids, Industrial, Commercial, Government and Hospitals. Education Georgia Tech. Civil Engineering. PW-8883, Engineering News-Record.

When Answering
BOX NUMBERS . . .
to expedite the handling of your correspondence and avoid confusion, please do not address a single reply to more than one individual box number. Be sure to address separate replies for each advertisement.

SEARCHLIGHT SECTION

CLASSIFIED ADVERTISING

Send New ADS or Inquiries to Class. Adv. of Engineering News-Record, P. O. Box 12, New York 36, N. Y., For October 2 Issue Closing September 22.

Engineers—Foremen—Office Men

Learn latest methods to organize and run work. Prepare for the top jobs.

Send post card for details.

GEO. E. DEATHERAGE & SON
CONSTRUCTION CONSULTANTS
Satsuma, Florida

WANTED:

Up to 150 feet of 6' or 8' diameter used steel pipe or flume or corrugated pipe—also quantity of used Economy steel wall forms—also heavy duty trailer trucks.

P. O. Box 402, Barre, Vermont

SALE: Model 160

BUCKEYE DITCHER

Ladder type equipped with D4 Caterpillar diesel engine. 13' cutting depth installed on machine. (Parts for 16' depth with machine) Now cutting 30" trench with rooters for 42" cutting width. Mfg. by Buckeye Traction Ditcher Co., Findley, Ohio. excellent condition, only 1076 hrs. actual operating time.

MILLER BROTHERS
1515 N. Quincy St. Arlington, Va.
JAckson 2-7302

FOR SALE

360' 48" dia. 12 gauge corrugated Steel Drainage Pipe, fully bituminous coated and double riveted. 18' 48" dia. 12 gauge 2' long bands with bolts, fully coated. Pipe has been slightly used and in excellent condition.

GULL CONTRACTING CO., INC.
33-15 Lawrence St., Flushing 54, N. Y.
FL 3-7400

FOR SALE or RENT

1—Lorain L-85—Shovel, Crane, Dragline 1956
1—Lorain MC-424 Truck Crane 1954
1—Lorain TL-25-J Backhoe
1—Lorain TL-25-K—Crane, Backhoe, Dragline 1953

S. J. ZIOBRO, INC.
158 Orchard St. East Rutherford, N. J.
GEneva 8-6097

SALE or RENT

3—LeTourneau-Westinghouse Model B Fullpak Scrapers, fully modified with new Fuller 1520 Transmissions. Condition is excellent and priced for immediate disposal.

1—LeTourneau-Westinghouse "Twin C" Pusher, the perfect mate to a fleet of rubber tired scrapers reduced in price to sell.

1—LeTourneau-Westinghouse Standard B Tournapull with Fuller 1520 transmission modification. This machine is a dependable high production unit priced right.

Illinois Contractors' Machinery, Inc.
Chicago, Ill. TUxedo 9-0871

CONTRACTORS & ENGINEERS

Fill When and Where you need it!

We specialize in large quantities of Fill and Borrow for Superhighways, Airports, Dams, etc. Ask us for details! Phone Plaza 5-7037 or write

NEW YORK RARITAN CORP.
515 Lexington Ave., New York 17, N. Y.

STRUCTURAL ENGINEERING
ARCHITECTURAL ENGINEERING
OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty-eighth year.
Write today without obligation

WILSON *Engineering Corp.*
College House Offices HARVARD SQ., CAMBRIDGE, MASS.

JUST RELEASED GOVT. SURPLUS

TENSIOMETER

TRADE NAME DYNAMOMETER

Measures Traction, Tension, or Weight

A PRECISION INSTRUMENT WHERE QUICK TESTS FOR SAFETY ARE ESSENTIAL.

Mfg. by Dillon Co.

5" DIAL
8½ LBS

Used by: Leading industrial plants, experimental shops, schools, universities, branches of govt.

To determine strengths of: Bondings ● automobile and aircraft frame and cross piece buckling ● chain and cable ● earth anchors ● draw bar testing hydraulics ● clutch loads ● hardware fixtures ● tractor and truck load pulls.

Simple test arrangements: Simply apply: winch, block and fall, hydraulics, jack, or turnbuckle.

This is NOT a spring measuring device operates by deflection of special ultrasensitive alloy beam. Registers a full scale reading in pounds with only .040 deflection. Certified by U.S. Bureau of Standards. Portable . . . rugged . . . retains sensitivity indefinitely . . . unaffected by temperature. *[FREE Illustrated Brochure on Request.]*

NEW, FULLY GUARANTEED
10,000 LB TEST
$59.00
GOV'T COST $135.00
Complete with case, illustration of construction, and instructions for uses

[Rated firms shipped open account.]

JOB LOT TRADING CO., Box 352, Church St. Station, N. Y. 8, N. Y.

MINE DETECTORS—$30.00 each

(COMPLETE WITH CARRYING CASE - LESS BATTERIES)

F.O.B. NEW YORK
ORIGINAL COST
$350.00

Ideal for detecting metals underground, such as: Gas Pipes, Water Pipes, Sewer Pipes, etc. & all Metal objects.

J. J. EDELSON
654 Broadway
NEW YORK 12, N. Y.
Phone: AL 4-3086

ALLIS CHALMERS HD20 TRACTORS

7—Year 1952 equipped with Push Blocks. In addition 3 are equipped with Carco Winches. Exceptional Bargains. Immediately available. Will sell in one lot or individually. Located at Massena, N. Y. Subject to prior sale or disposition.

L. B. SMITH, INC.
357 W. Fayette St. Syracuse 2, N. Y.
Phone GRanite 5-2196

FOR SALE OR RENT

30 ton Browning Diesel Loco. Crane
80 ton GE Diesel Elec. Loco. New 1950
65 ton Whitcomb Diesel Elec. Loco.
44 ton Gen. Elec. Diesel Elec. Loco.
25 ton Whitcomb Diesel Elec. Loco. 1948
50 ton Amer. Guy Derrick, 115' Mast, 100' Bm.
90 HP Lidgerwood 2D Diesel Hoist W/Swinger
2½ Yd. Link-Belt K-595 Diesel Crane, 120' Bm.
110 HP Clayton Port. Steam Generator

Also Other Constr. & Ry. Equip.

WHISLER EQUIPMENT CO.
1905 Railway Exchange Bldg., St. Louis 1, Mo.
CHestnut 1-4474

FOR RENT
SECTIONAL BARGE
MANITOWOC

SEVEN SECTIONS, FORMS BARGE 40'x70', CAN HANDLE MODEL 3900 MANITOWOC CRAWLER CRANE.

KOCH CRANE and DERRICK CO., INC.
362 Casanova Street
Bronx 59, N. Y., *Kilpatrick 2-3800*

CRANES FOR RENT

CRAWLERS — Capacities to 60 tons, Booms to 180 ft.
TRUCK CRANES — Capacities to 35 tons, Booms to 130 ft.

P and H, Lima and Manitowoc.
Top-Condition erection cranes

ROGER SHERMAN
CRANE SERVICE, INC.
East Hartford, Connecticut JAckson 8-4106

SALE OR RENT

1—15 B Bucyrus-Erie Crane and Backhoe
1—38 B Bucyrus-Erie Crane and Dragline
1—25 Ton Bay City Truck Crane
1—30 Ton Lorain Truck Crane
1—D17,000 Caterpillar Power Unit
1—25 Ton Ohio Diesel Locomotive Crane
1—30 Ton Browning Diesel Locomotive Crane

B. M. WEISS COMPANY
Girard Trust Bldg. Philadelphia 2, Pa.

LOW COST INSTALLATION AND OPERATION

CABLEWAYS
IMMEDIATE SHIPMENT
ELECTRIC, STEAM OR DIESEL
CAPACITY 3 TO 20 TONS
SELL, RENT OR BUY

FOR DAMS, BRIDGES, BREAKWATERS, FILTRATION AND SEWERAGE PLANTS

FOR SPEED, ECONOMY, EFFICIENCY, FLOOD SAFETY, LABOR REDUCTION

AMBURSEN DAM CO. INC.
295 MADISON AVE. NEW YORK

FORSYTHE EQUIPMENT CO., INC.

MANITOWOC SPEEDCRANES

RENTALS

Capacities to 70 Tons
Booms to 140 ft. and 30 ft. jibs
Special rates on long rentals

Exeter 2-6125 37-11 Vernon Blvd.
Long Island City 1, New York

PILING

SURPLUS NEW and USED **For Sale, Wanted or Rent**

We do a Nation-wide business in

STEEL SHEET PILING

IMMEDIATE SHIPMENT

815 pcs. 75 to 30 ft. Beth. SP-6a—New York
100 pcs. 62 ft. Beth. ZP-32—Connecticut
322 pcs. 60 to 30 ft. M-115 and M-116—Illinois
258 pcs. 50 ft. ZP-32—Maryland
241 pcs. 48 ft. MZ-27—Louisiana
76 pcs. 30 to 28 ft. M-112—Florida
67 pcs. 30 to 20 ft. M-116—Wyoming

Other Lengths & Sections at Various Locations, Including Storage Yards at CHICAGO & BUFFALO

PILE DRIVING EQUIPMENT

Vulcan and McKiernan-Terry
Steam Pile Hammers and Extractors
Hoists and Boilers

MISSISSIPPI VALLEY EQUIPMENT CO.
1908 Railway Exchange Bldg.
St. Louis 1, Mo. CHestnut 1-4474

H & STEEL SHEET PILING

3700 PCS. BETH. SP6, A65' 50' 56' & 48' & 40'
264 PCS. MP112—40' & 60'
447 PCS. BETH.—AP3—25 & 30, 40' & 60' FT.
780 PCS. BETH.—DP2—31' 40' 50' & 64'
536 PCS. BETH.—ZP32—25' 36' 48' 55' & 62'
1500 PCS. BP114—BP14—55'-60'
112 8'—300 15'—92 pcs 20' Corrugated

PILING BOUGHT—SOLD—RENTED
STOCKS: N. Y.—BOSTON—BUFFALO
MONTREAL—BALTIMORE—JACKSONVILLE
RICHMOND—VANCOUVER—NEW ORLEANS

DIESEL LOCOMOTIVES
8—Gen. Elec 80, 65, 45 & 25 ton
4—Whitcomb 65 ton
5—Plymouth, 10, 20 & 35 ton

4—GANTRY WHIRLEY CRANES
25 R-Amer. 75' Gantry 165' Boom
20 R-Amer. 60' Gantry 139' Boom

R. C. STANHOPE, INC.
60 E. 42nd St. N. Y. 17, N. Y.
Telephone Mu 2-3075

RAILS-TIES

TRACK ACCESSORIES
NEW and RELAYING

SAVE ON YOUR
TRACK CHAINS ROLLERS SPROCKETS IDLERS, ETC.
for Caterpillar—International—Allis Chalmers
BRAND NEW—GUARANTEED
SEABOARD EQUIPMENT CO., INC.
161-108 Jamaica Ave., Jamaica 32, N. Y.
AX-7-4422

STEEL SHEET PILING

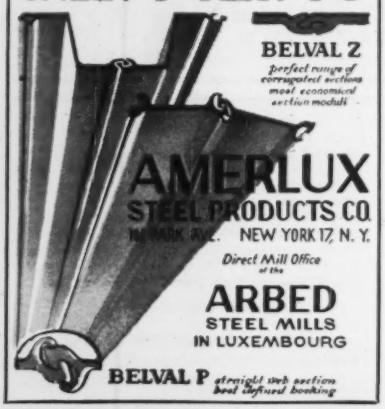
LARSSEN and ROMBAS Sections

STOCKS AVAILABLE IN:
- Linden, New Jersey
- Ft. Lauderdale, Florida
- Houston, Texas

WESTERN SERVICES CORPORATION
601 E. Linden Ave., Linden, N. J.
MArket 4-4000 HUnter 6-4000

In Florida Call: Port Everglades Steel Co.
Ft. Lauderdale—JA. 4-6343
In Houston Call: G. Oliver—CA. 4-7234

NEW. SURPLUS
STEEL SHEET PILING



BELVAL Z
perfect range of corrugated sections most economical section moduli

AMERLUX
STEEL PRODUCTS CO.
NEW YORK 17, N. Y.

Direct Mill Office of the
ARBED
STEEL MILLS
IN LUXEMBOURG

BELVAL P *straight web section best deflyard bearing*

RAILROAD Cross and Switch **TIES**

Promptly from adequate stocks
NEW and USED *(as available)*
GILLIS & COMPANY
134 Breckenridge Lane Louisville 7, Ky.

"FASTER FROM FOSTER"
STEEL SHEET **PILING**
H-Bearing Pile • Pipe Pile • Rail Pile
From our regular stocks
L. B. FOSTER CO.
PITTSBURGH 30 • ATLANTA 8 • NEW YORK 7
CHICAGO 4 • HOUSTON 2 • LOS ANGELES 5

PIPE

Surplus New & Used
FOR SALE

ALBERT
PIPE SUPPLY CO., INC.

PILING • PIPE • CULVERTS • VALVES & FITTINGS

ASBESTOS CEMENT PIPE • ALUMINUM PIPE

103 VARICK AVE., BROOKLYN, N. Y. • HY 7-4900

STEEL SHEET PILING

AVAILABLE FOR PROMPT SHIPMENT

Pcs.	Section	Length	Location
200	MP-116	50 to 60'	Kansas City
200	MP-115	50 to 60'	Kansas City
150	MP-112	50 to 60'	Chicago
450	MP-116	35 to 60'	Chicago
175	MP-115	50 to 60'	Chicago
180	MP-112	19 to 20'	Nebraska
1300	SP-6a	15 to 47'	New York

CONMACO, INC.
PHONE DRexel 1-3930
804 KANSAS AVE., KANSAS CITY, KANSAS

HY DRACHMAN STEEL CORP.
STRUCTURAL STEEL

The Contractors Steel Supply House
52-25 2nd St., Long Island City, N. Y.
RAvenswood 9-1262

STEEL IS OUR BUSINESS

ASSOCIATED PIPE & FITTING CO.

PILING PIPE SHELLS MANDREL FITTINGS	K & M ASBESTOS CEMENT PIPE	CULVERTS CIRCLE ARCH SECTIONAL

P. O. BOX 67, CEDAR GROVE, N. J. • CE 9-4800

PIPE
VALVES and FITTINGS
All Sizes in Stock
NEW-USED
GREENPOINT PIPE SUPPLY CORP.
Bogart and Stagg Streets, Brooklyn, N. Y.

ECA SPECIALS

1—65-ton Whitcomb diesel electric locomotive, type 0-4-4-0

2—10-ton Plymouth diesel locomotives, rebuilt.

3—8-ton Brookville "V" 8 power unit locomotives. Ready to go!

3—30-ton Browning diesel locomotive cranes, 50—85' booms. Cat. diesel engine. Excellent condition.

Stiffleg and guy derricks from 10 to 50-ton capacity.

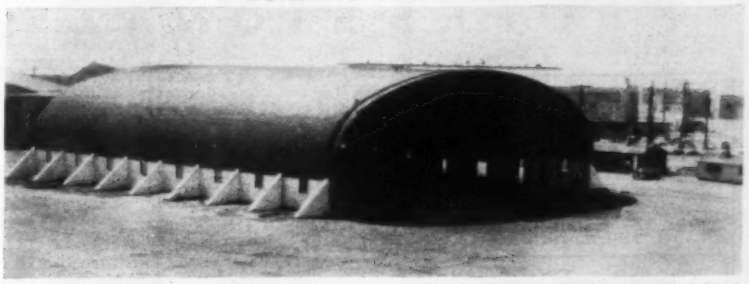
Hoists—gas—diesel—electric steam. 5000# to 15,000# line pull.

ECA

EQUIPMENT CORPORATION OF AMERICA

CLIFTON HEIGHTS, PA., Box J 608, Sub. of Phila.
GROVETON, PA., Box 43-J Sub. of Pittsb.
CHICAGO 4, ILL., 327J So. La Salle St.
NEW YORK 7, N. Y., 30-J Church St.

BUILDING FOR SALE



OPEN END HANGAR OR UTILITY BUILDING 130' WIDE BY 160' LONG ALL STEEL BOLTED CONSTRUCTION. PRESENT BUILDING HAS 11' HIGH CONCRETE BLOCK SIDEWALLS GIVING APPROX. 40' CLEARANCE AT ARCH. BIDS WILL BE ACCEPTED UNTIL OCT. 10TH.

CAN BE INSPECTED AT DOVER AIR FORCE BASE, DOVER, DEL. CALL DOVER 4110 FOR APPOINTMENT OR WRITE:

405 S. DuPont Road, JAMES JULIAN, INC. Elsmere, Delaware

CLOSE OUT! TANK TRAILERS!

— CHOOSE FROM 10 —

1,000 gal. capacity. Tandem axles. Ideal for road sprinkling, gas and fuel oil transportation.

MEMPHIS EQUIPMENT CO.
766 So. Third, Memphis, Tenn. • JA 5-7841
Allegheny Branch: Chambersburg, Pa. • CO 3-3191

FOR SALE

4—200 W Bucyrus-Erie Draglines
1—620 Page Dragline
1—1201 Lima Dragline
1—80 D Northwest Shovel
1—120 B Dragline Boom
1—Koehring 1½ yd. Elec. Tunnel Shovel
1—44B Bucyrus-Erie Shovel
6—9 ITD Euclids, Bottom Dump
4—36 TD Euclids, End Dump
1—34 E Foote Paver
4—34 E Rex Pavers
1—#6 Northwest Shovel Front

Complete Catalogue on Request

WESTERN EQUIPMENT COMPANY
Used Machinery Division
4009 Fairview Ave.
Box 877 Boise, Idaho

FOR SALE

650-B Bucyrus Erie Elec. Drag, 195', 16 yd.
15-W Bucyrus Erie Elec. Drag, 215', 13 yd.
631 Page Elec. Dragline, 200', 8 yd.
9-W Bucyrus Erie Elec. Drag, 200', 8 yd.
625 Page Diesel Drag, 150', 10 yd.
723 Page Diesel Drag, 130', 10 yd.
621-S Page Diesel Drag, 125', 7 yd.
200-W Bucyrus Erie Diesel Drag, 125', 6 yd.
7-W Bucyrus Erie Diesel Drag, 180', 5 yd.
5-W Bucyrus Erie Diesel Drag, 120', 6 yd.
2400 Lima Drag, 130', 5 yd.
4500 Manitowoc Drag, 120', 5 yd.
3900 Manitowoc Speedcrane, 100' boom
3500 & 3000 Manitowoc Crawler Cranes
111-M Marion Drag, 100', 4 yd.
1201 Lima Dragline, 85', 3 yd.
1001 Lima Dragline, 85', 2½ yd.
750-B Bucyrus Erie 20 yd. Elec. Shovel
5480 Marion 18 yd. Elec. H. L. Shovel
170-B Bucyrus Erie 6½ yd. Elec. Shovel
120-B Bucyrus Erie 4 yd. Elec. Shovel
1400 P&H 4 yd. Elec. Shovel
44-B Bucyrus Erie 2 yd. Shovel
Unit 1020 ¾ yd. Shovel
Large selection of smaller Shovels and Draglines available
Model T-750 Reich Truck Mounted Rotary and down-the-hole Drill
Lima Model "C" Roadpacker
Euclid Trucks—Models 86FD, 27FD, 5FD, 2FD, 63TD, 36TD, 31TD, 25FDT, 38FDT, 67FDT
Truck Cranes, Dozers, Scrapers, Front End Loaders, Drills, Buckets, Attachments and other misc. equipment available.

FRANK SWABB EQUIPMENT CO., INC.
313 Hazleton Nat'l. Bank Bldg.
Hazleton, Pa. GLadstone 5-3658

SURVEYING INSTRUMENTS

USED • REBUILT • SALE
RENT • REPAIRING

TRANSITS AND LEVELS

New or Rebuilt
Sale or Rent

Headquarters for REPAIRS — any make — Factory Service. We will also buy your old instruments or take them in trade.

A complete line of Engineering Instruments and equipment for field or office. Write for catalog NLR 89.

WARREN-KNIGHT CO.
Manufacturers of Transits and Levels
136 No. 12th St., Philadelphia 7, Penna.

MODEL 4500 MANITOWOC SPEEDCRANE FOR SALE

Serial #4566, complete with 140' Boom (45' bottom steel, 38' top aluminum, 37' center aluminum), Caterpillar D386 Diesel engine, air controls, full revolving fairlead, 25'9" crawlers, 60" crawler treads, 5 KW Koehler light plant complete with lights, one 20' aluminum boom insert, air windshield wiper; including bucket.

Located in Florida.

Owner: C. B. HOPPE
Box 590, Palm Beach, Fla.
Phone: Temple 2-2479

RE-BUILT REPAIRS RENT REAL EXPERTS

ALL MAKES

BUFF

69 Day St., New York WOrth 2-2797

TRANSITS & LEVELS

Various Makes
NEW & REBUILT

Fully equipped modern shops — all makes and models repaired — all work guaranteed — prompt service — complete line field supplies.

INSTRUMENTS RENTED

Midwest Representatives: W. & L. E. Gurley, Distributors—Filotenica Salmoiraghi

NATIONAL BLUE PRINT CO.
Established 1914
210 S. Canal St. Chicago (6), Ill.

GOV'T SURPLUS—NEVER USED CEMENT & SOIL Liquid Limit Machine

$15.00 VALUE $44

For measuring the plastic properties of soil and determining the moisture content of soils necessary to produce a stable mixture under various conditions as applied to road building, etc.

- Constructed in accordance with ASTM specifications.
- A complete unit with brass cup & grooving tool.

JOB LOT TRADING 53 Vesey St. NYC

Need A "Lift"?

CRANES, INC.

RENTALS

Manitowoc 3900's — Crawlers 3500's

Latest Models
Long Booms and Jibs

TRUCK CRANES

Link Belt and Bay City. Cap. to 35 Tons. Booms to 150 ft. Hoists-Welders-Generators

Maspeth 78, N. Y. ST 4-1776

PROFESSIONAL SERVICES

NEW ENGLAND

Metcalf & Eddy
ENGINEERS
Investigations Reports Design
Supervision of Construction
and Operation
Management Valuation Laboratory
1300 Statler Building, Boston 16

MIDDLE ATLANTIC

Edwards and Kelcey
Engineers and Consultants
Highways—Structures
Traffic—Parking
Terminal Facilities
3 William St., Newark, New Jersey
Boston New York Baghdad

John Clarkeson
Consulting Engineer
Civil Engineers—Consulting Services
Highways, Airports, Bridges
Surveys, Waterfront Facilities
Room 203, Del & Hudson RR Bldg.
Albany, N. Y.

E. Lionel Pavlo
Consulting Engineer
Design, Supervision, Reports
Bridges, Highways, Expressways
Marine Structures, Public Works
Industrial Construction, Airports
642 Fifth Ave. New York 19, N. Y.

King & Gavaris
CONSULTING ENGINEERS
Bridges, Highways, Tunnels
Waterfront Structures, Reports
Investigations, Foundations
Design & Supervision of Construction
425 Lexington Ave. New York 17, N. Y.

Lawrence S. Waterbury
Consulting Engineer
Bowling Green 9-9298
26 Broadway New York 4

D. B. Steinman
Consulting Engineer
BRIDGES
HIGHWAYS
Design, Construction
Strengthening, Investigations,
Reports, Advisory Service
117 Liberty St., New York 6, N. Y.

Severud-Elstad-Krueger-Associates
Consulting Engineers
Structural Design - Supervision
Reports - Buildings - Airports
Special Structures
415 Lexington Ave., New York 17, N.Y.

ALWAYS READY
Yes, these consultants are always ready to help you with any problem concerning engineered construction. Call on them with the assurance that you will be receiving the finest of professional advice.

Lockwood, Kessler & Barlett, Inc.
Engineers *Surveyors*
Civil Engineering Investigations, Reports and Designs, Supervision of Construction, Cadastral, Geodetic, Topographic & Engineering Surveys, Photogrammetric Engineering and Mapping.
One Aerial Way Syosset, N. Y.

Grof & Myers
Consulting Engineers
Highways—Bridges—Airports
Surveys—Reports—Plans
Construction Supervision
1824 North 4th St. Harrisburg, Pa.

Modjeski and Masters
Consulting Engineers
Bridges and other Structures
Foundations
Highway and Expressways
900 North Sixth St. Harrisburg, Pa.
Philadelphia - Miami - New Orleans

Robert W. Lowry, Inc.
Consulting Engineers
Robert W. Lowry M. M. Lepkaluk
Design, Supervision, Reports. Long Span & Movable Bridges, Expressways, Highways, Airports, Prestress Design, Strengthening, Soil Engineering.
227 Pine St., Harrisburg, Pa.
New York-New Orleans-Detroit-Boston

Pennsylvania Drilling Company
Subsurface Explorations, Grouting.
Industrial Water Supply.
Mineral Prospecting.
Large Diameter Drilled Shafts, Reports
1205 Chartiers Ave. Pittsburgh 20, Pa.

Michael Baker, Jr., Inc.
Consulting Engineers, Civil Engineers, Planners & Surveyors; Airports & Highway Design; Water Works & Sewerage Design & Operation; Aerial Topo Maps; Surveys; Reports & Investigations; Irrigation. Home Off.—Rochester, Pa. Br. Off.: Jackson, Miss.; Harrisburg, Pa.; College Park, Md.

Sprague & Henwood, Inc.
Drilling Services
Foundation Investigations, Soil Testing & Test Borings, Grout Hole Drilling & Pressure Grouting, Diamond Core Drilling.
Main Office
221 W. Olive Street, Scranton, Pa.
Branches:
1009 Western Savings Fund Bldg., Philadelphia, Pa.
11 W. 42nd St., New York, New York
300 Magee Bldg., Pittsburgh, Pa.
575 Linwood Ave., N. E. Atlanta, Ga.
Box 1446—Grand Junction, Colorado
Buchans, Newfoundland

Buchart Engineering Corp.
Consulting Engineers
Highways - Bridges - Sewer Systems
Surveys - Water Works - Dams - Reports
Supervision - Industrial - Municipal Structures
55 S. Richland Ave., York, Pa.
Lancaster, Pa. Washington, D. C.

SOUTH

Dignum and Associates
Consulting Engineers
Civil Electrical
Structural Mechanical
260 Palermo Avenue
Coral Gables 34, Florida

Rader and Associates
Engineers - Architects
Sewage Disposal, Water Works, Ports, Airports, Bridges, Highways, Office and Commercial Buildings, Industrial Plants, Reports, Investigations, Consultations, Aerial Photography, Photogrammetry.
111 N.E. 2nd Avenue, Miami 32, Fla.

MIDDLE WEST

Consoer, Townsend & Associates
Water Supply, Sewerage, Flood Control & Drainage, Bridges, Express Highways, Paving, Power Plants, Appraisals, Reports, Traffic Studies, Airports, Gas & Electric Transmission Lines.
360 East Grand Ave., Chicago 11, Ill.

Roy B. Everson
S.E. Consultant Since 1900
For Purification Systems as applied to Sewage Treatment, Water Works and Swimming Pool Circulating Systems. A New System for Automatic Control
211 W. Huron St. Chicago 10, Ill.
Phone SUperior 7-3339

Vogt, Ivers, Seaman & Assoc.
Engineers-Architects
Highways — Structures — Expressways
Industrial Bldgs. — Harbor Facilities
Airports — Dams — Docks
Surveys — Reports
34 W. Sixth St., Cincinnati 2, O.
20 N. Wacker Dr., Chicago 6, Ill.

Toledo Testing Laboratory
Engineers—Chemists
Concrete — Soils — Asphalt
Inspection Research
Tests Development
Foundation Investigation
Borings — Diamond Drilling — Load Tests
Soils Mechanics Laboratory
1810 North 12th St. Toledo 2, Ohio

When you need a SPECIALIST in a hurry . . .
Engineering News-Record's Professional Service Section offers the quickest, most direct method of contacting consultants who may be available NOW.

Photronix, Inc.
offering an integrated process of
AERIAL PHOTOGRAMMETRY
AND
ELECTRONIC COMPUTATION
For Engineers, By Engineers
790 King Ave. Columbus 12, Ohio

FAR WEST

Woodward-Clyde-Sherard & Assoc.
Consulting Civil Engineers
Soil and Foundation Engineering; Earth Dams; Engineering Geology; Highway and Airport Pavement Design
1150 28th Street, Oakland, California
1240 West Bayaud, Denver, Colorado
310 V.F.W. Bldg., Kansas City, Mo.
4815 Dodge Street, Omaha, Nebraska

INSPECTION & TEST

The Haller Testing Labs., Inc.
140 Cedar St., N. Y. 6, N. Y.
Testing and Inspection of
Construction Materials for:
Expressways—Airports
Structures—Bridges
Complete Soils Laboratory
Test Borings—Load Tests
Boston, Plainfield, N. J. New Haven

AERIAL SURVEYS

Aerial Map Service Co.
Topographic, Planimetric, Photo Maps for Highways, Mining, Resources, Construction, City Maps, Tax Maps, Photo Geology, Tellurometer Radio Distance Measurements, Triangulation, Electronic Computation.
1616 Madison Ave., Pittsburgh 12, Pa.

American Air Surveys, Inc.
AERIAL TOPOGRAPHIC MAPS &
AERIAL PHOTOS FOR
• Highways • Airports • Power & Pipe Lines • Railroads • Mining • All types construction • Stockpile inventories
907 Penn Ave. Pittsburgh 22, Pa.

Clyde E. Williams & Assoc., Inc.
Aerial Photos - Enlargements
Topographic Maps
At large and particular scales to suit various engineering needs, e. g. Airports, City Sewer & Water, Power & Pipe lines, Reservoirs, Subdivisions, Highways, Bridges & Inventories.
312 W. Colfax Ave. South Bend, Ind.

TRANSLATION

Mario W. Gamalero
Civil Engineer
PROFESSIONAL SPECIFICATION
TRANSLATION
English—Spanish
Spanish—English
9ra Calle "A" 4-70, Zona 1
Apt. Postal 293 Guatemala City, C.A.

CONSULT THESE SPECIALISTS . . .

when you need professional assistance in solving difficult problems. Their specialized knowledge and broad experience can prove invaluable in saving both time and money for you.

Engineering News-Record invites other consultants to list the special services they offer on these pages. Rates for the Professional Services section are:

	PER WEEK		
	13 times	26 times	52 times
¾"—$14.35	$13.35	$12.45	
1½"—$23.85	$22.30	$21.00	

ADVERTISERS IN THIS ISSUE

Acker Drill Co., Inc. 150
Aetna Life Affiliated Co. 158
Allis Chalmers Mfg. Co. Tractor Div. 124-125
Allison, Div. GMC 114
Aluminum Company of America 37
American Bitumuls & Asphalt Co. 147
American Cyanamid 173
American Fore Loyalty Group 96
American Gilsonite Co. 88-89
American Marietta Co. 126
American Oil Company 183
American Pecco Corp. 46-47
American Vitrified Products Co. 5
Armco Drainage & Metal Prod., Inc. 25
Atlas Powder Co. 12
Austin Western Works, Construction Equip. Div., Baldwin-Lima-Hamilton Corp. 118-119

Barber Greene Co. 16
Barco Manufacturing Company 58
Beech Aircraft Corporation 52
Bethlehem Steel Co. 121
Borden Metal Products Co. 28
A. M. Byers Company 2nd Cov.

J. I. Case 186
Cement Gun Company 138
James B. Clow & Sons 163
Commercial Shearing & Stamping Co. 161
Committee On Steel Pipe Research 123
Concrete Reinforcing Steel Institute 168-169
The Concrete Surfacing Machinery Co. 154
Continental Motors Corp. 10
John Curran, Ltd. 106

John Deere, Ind. Div. 171
The Deming Co. 157
Dewey & Almy Chemical Co. 9
Douglas Fir Plywood Association 86-87
Dresser Manufacturing Division 146
Richard Dudgeon, Inc. 100
DuPont de Nemours & Co. Explosives 117

Economy Forms Corp. 116
Elgood Equipment Corp. 162

Fate Root Heath Co. 149
Federal Sign & Signal Corp. 158
Franki Foundation Co. 51
Fruehauf Trailer Company 80-81

General Tire & Rubber Co. 3rd Cover
Goodyear Tire and Rubber Inc. 1
Granco Steel Prod. Co. 93
Griffin Wellpoint Corp. 100
Gulf Oil Corp. 130-131
Gunite Concrete and Construction Co. 148
W. & L. E. Gurley 110

Haloid Xerox, Inc. 107
B. M. Heede, Inc. 154
Heltzel Steel Form & Iron Co. 166
Hercules Powder Company 98

Intercontinental Equipment Co. 148
International Steel Co. 62
Irving Subway Grating Co. 55

Jackson Vibrators, Inc. 90
Jaeger Machine Co. 144
Jenkins Brothers 14
Johns Manville Corp. 38-39, 185
Johnston Pump Co. 150
Jones & Laughlin Steel Corp. 53

Keasbey & Mattison Co. 113, 151
Keuffel & Esser Co. 137
Kinnear Mfg. Co. 152
Kohler Co. 155

Larsen Products Corp. 64
R. G. LeTourneau 128
Liberty Mutual Insurance Company 56-57
Link Belt Speeder Corp. 4
Lord Electric Company, Inc. 41
Louisville Cement Co. 6
Ludlow Valve Mfg. Co., Inc. 129

Maginniss Power Tool Co. 163
Marion Power Shovel Company 61
Massey-Ferguson, Inc. Indus. Div. 7
McKinney Drilling Co. 148
W. R. Meadows, Inc. 122
Merriman Brothers, Inc. 120
Modern Blueprint Rack Co. 162
Moretrench Corp. 153
Morris Machine Works 132
Mueller Co. 65-68

Naylor Pipe Company 135
Northwest Engineering Co. 3

Pacific Mercury 60
Page Steel & Wire Div., Amer. Chain & Cable 91
Patent Scaffolding Co. 139
Peelle Co. 83
Peerless Pump Div., Food Mchy. & Chem Corp. 142
Perlite Div., Great Lakes Carbon Corp. 112
Permacrete Products Corp. 133
Permagile Corp. of America 148
Phoenix Bridge Corp. 100
Plan Hold Corporation 106
Portland Cement Association 74-75
Professional Publishing Co. 156

Raymond International, Inc. 178
Reda Pump Company 138
Republic Steel Corporation 32-33
Richmond Screw Anchor Co. 97
Rilco Laminated Products, Inc. 79
Roche Estimating Methods 116
Rockwell-Standard Corp., Grating Div. 154
Rodney Hunt Machine Co. 8
John A. Roebling's Sons Corp. 141

Sauerman Bros., Inc. 160
Sonoco Products Co. 94-95
Spencer Chem. Co. 71
J. S. Staedtler Co. 165
John W. Stang Corp. 133
Stanpat Co. 143
Steelcraft Mfg. Co. 159
Steel Joist Institute 174-175
Sylgab Steel & Wire Corp. 84
Symons Clamp & Mfg. Co. 2

Templeton Kenly & Company 133
Texas Co. 4th Cov.
Thew Shovel Co. 101-104
Timken Roller Bearing Co. 177
Townsend Co. 13

Underpinning & Foundation Co., Inc. 133
United Sheet Metal Co. 168
U. S. Rubber Co. 18
U. S. Steel Corp. 108-109
United Steel Fabricators 127

Wagner Elect. Corp. 76
Water Seals, Inc. 73
Waukesha Motor Co. 134
Weil Pump Co. 145
Weinman Pump Mfg. Co. 92
Winpower Mfg. Co. 157

Yuba Mfg. Div., Yuba Consol. Ind., Inc. 11

Professional Services 196

CLASSIFIED ADVERTISING

F. J. Eberle, Business Mgr.

Employment Opportunities 191,192
Notices
Proposals 188-191
Equipment
(Used or Surplus)
(For Rent, Sales Wanted) 193-195

ENGINEERING NEWS-RECORD

330 West 42 St., New York 36—LOngacre 4-3000

ABC Member ABM

Number of copies of this issue printed 83,364

D. S. ROBERTSON, Advertising Sales Manager
D. J. CASSIDY, Business Manager

ADVERTISING REPRESENTATIVES

Atlanta, 3—Rhodes-Haverty Bldg.,
D. C. Billian

Chicago, 11—520 No. Michigan Ave.,
L. H. Hunt, W. G. Payne
J. A. Shipley

Cleveland, 13—1164 Illuminating Bldg.,
55 Public Square
F. P. DiToro

Dallas, 1—Vaughn Bldg., 1712 Commerce St.,
Robert T. Wood

Denver, 2—1740 Broadway
J. W. Patten

Detroit, 28—Penobscot Bldg.,
D. L. Kates, R. I. Mace

Los Angeles, 17—1125 W. Sixth St.,
Knox Bourne, S. S. Tiebout

New York, 2—500 5th Ave.,
C. D. Neulen, H. T. Olsen
J. C. White

Philadelphia, 3—Six Penn Center Plaza
D. G. Jensen

Pittsburgh, 22—1111 Oliver Bldg.,
M. Russell

St. Louis, 8—Continental Bldg.,
E. B. Mingle, Jr.

San Francisco, 4—68 Post St.,
J. W. Otterson, R. C. Alcorn

OTHER SALES OFFICES:

Boston, 16—350 Park Square Bldg.,
Great Britain—E. E. Schirmer, McGraw-Hill House, 95 Farringdon St., London, E. C. 4
Europe—Michael R. Zeynel, 15, Landgraf-Wilhelm, Frankfurt/Main, Germany

New Threats to Water Supplies

WATER POLLUTION IS TOO COMMONLY CONSIDERED solely in terms of streams, surface waters. It must be remembered that pollution of groundwater can be even more serious than pollution of rivers and lakes since groundwater is so widely tapped for human consumption without treatment. Also, once in the groundwater, polluting materials tend to remain there for longer periods than in surface waters.

Importance of protecting groundwaters from pollution is emphasized in New York's Suffolk County, where the Health Department has put a ban on residential building after finding detergent pollution in wells (ENR Sept. 4, p. 25).

Suffolk County, the eastern end of Long Island, has tremendous groundwater reserves, upon which it is totally dependent. Its ban on homebuilding (and thereby on cesspool building) was quite necessary; for the finding of syndets (synthetic detergents) in wells was serious. While syndets are not toxic, they do hurt the quality of water and therefore should be controlled.

The forceful action of Suffolk's small Health Department is inspiring. Maybe it will inspire all to think of this and other new types of pollutants as real threats to valuable groundwater reserves.

Building Code Chaos Continues

THE HOMEBUILDING INDUSTRY HAD THE CHANCE last week to indicate whether or not it wanted a national standard building code for small residences. And in a vote taken by the American Standards Association the industry showed that its opinions are still sharply divided. Architects, builders and mortgage men favored development of such a code under ASA sponsorship; material producers were on both sides of the question; and three major associations of building officials opposed a national code. The opposition may be sufficient to thwart a first step toward uniform building regulation in the U. S.

Sponsors of the proposed standard code anticipate that standardization would bring the same benefits to homebuilding that it has brought to other industries (ENR July 31, p. 25 and 92). If the size of the organizations represented by these sponsors is any indication, most of the industry is in accord with this opinion.

However, it is probable that an ASA building code would not be adopted by many local governments if it did not have the backing of building officials. These code authorities argue that standardization may be harmful (see p. 24). They point to the high cost of developing another code and the difficulty of keeping it up to date, a task for which, they say, ASA is ill-fitted. They speak from experience; they have developed three national model codes.

While the building officials have a strong argument against an American standard code, it is not right that, as a small minority, they should prevent the majority of the homebuilding industry, and probably the majority of the general public, from attaining its objective of uniform regulation of small residential buildings. On the other hand, establishment of an American standard is not the only means of achieving uniform regulation.

The aims of the sponsors of the standard code and the ambitions of the building officials could both be satisfied if the model codes of the building officials associations were reduced to a single code. To bring this about appears to require a merger of these associations.

This is not a new proposal. There are many other good reasons why such a merger would be advantageous to building officials and the building industry alike. However, a few individuals in the directorship of these organizations have thwarted it time after time.

Public opinion should be brought to bear on these building officials to force them to step aside. The merger is a logical first step, and would soon lead to others that would free the whole building industry—not just homebuilding—of present building code chaos.

Aid to Education

A BETTER LAW than seemed possible at first emerged from Congress' attempt to provide federal aid to foster improvement in the field of scientific education. By eliminating the federal scholarships for undergraduates, which had first been proposed, the legislation will not unduly stimulate college enrollments before the teachers and the plant are available to care for them. The modest provision made for graduate scholarships, where the real need lies is also commendable. No additional funds are included for the National Science Foundation which could use them beneficially, but in over-all impact the law should serve a constructive purpose.

The $295 million, which the act provides over a four year period for loans to talented students, should be a sound investment. Particularly praiseworthy is the provision that priority for such loans is to be granted to students expressing a desire to teach in elementary or secondary schools; if they actually do teach for five years after graduation, half of the total loan will be forgiven.

The legislation also points in the right direction in providing $300 million in matching grants to states desiring to purchase scientific equipment for use in the schools.

Looked at as an effort to provide better science teachers in our elementary and secondary schools, "The National Defense Education Act of 1958" is good legislation. But further efforts need to be made, whether by federal aid or otherwise, to enlarge physical plant on the campuses and to stimulate collegiate graduate study in the fields of science and engineering.

Tops for Deep-Down Drive and Traction!

the all-new wide-base

GENERAL

L LOGGING
C CONSTRUCTION
M MINING

BUILT WITH
NYGEN®
most indestructible cord material ever used in Truck Tires

In the toughest going, the Nygen-built General L. C. M. digs in and pulls you through faster for maximum profit. Built with a heavier, huskier tread, the L. C. M. delivers tremendous flotation plus crawler-like traction to speed up every job. And General's Nygen cord lets the L. C. M. take brutal punishment in stride, cuts down-time losses. Start now to get top profits with the tire that's tops for deep-down drive and traction . . . the all-new General L. C. M.

Specify Generals on your new equipment

THE GENERAL TRUCK TIRE

THE GENERAL TIRE & RUBBER CO. • Akron, Ohio

Another step toward this goal

41,000-MILE INTERSTATE HIGHWAY SYSTEM

Paving an Interstate Highway in Virginia with heavy-duty, flexible Texaco Asphaltic Concrete

The State Highway Departments are pushing ahead steadily with construction of their respective sections of the Interstate Highway System. Virginia and other States have paved a large mileage of these superhighways with hot-mix Texaco Asphaltic Concrete.

A hot-mix Texaco Asphaltic Concrete surface on a foundation of either plant-mixed Asphaltic Concrete or Asphalt Penetration Macadam, will stand up under the heaviest Interstate Highway traffic year after year. This flexible type of construction costs substantially less than rigid paving designed for the same traffic. Maintenance costs of Asphalt paving also have been found lower by the highway departments of many States.

To the motorist, one of the chief advantages of Texaco Asphaltic Concrete paving is the velvet smooth riding quality of its resilient, joint-free surface.

Helpful information on heavy-duty Asphaltic Concrete, as well as other types of Asphalt paving, is supplied in two free Texaco booklets. Copies can be obtained without obligation by writing our nearest office.

THE TEXAS COMPANY, Asphalt Sales Div., 135 E. 42nd Street, New York 17

Boston 16 (20 Providence St.) • Chicago 4 (332 So. Michigan Ave.) • Houston 1 (720 San Jacinto St.)
Jacksonville 1 (P.O. Box 749) • Denver 1 (P.O. Box 2100) • Philadelphia 2 (1411 Walnut St.)
Richmond 11 Va. (P.O. Box 1379) • Minneapolis 3 (Groveland Ave.-Clifton Pl.)

TEXACO REG. T. M.

TEXACO ASPHALT